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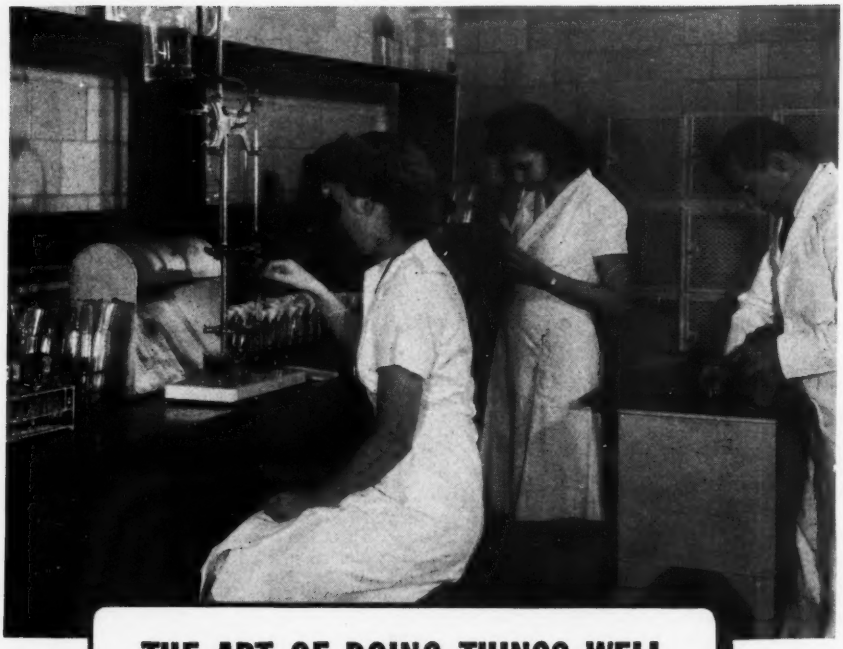

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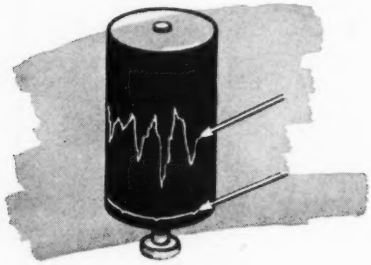

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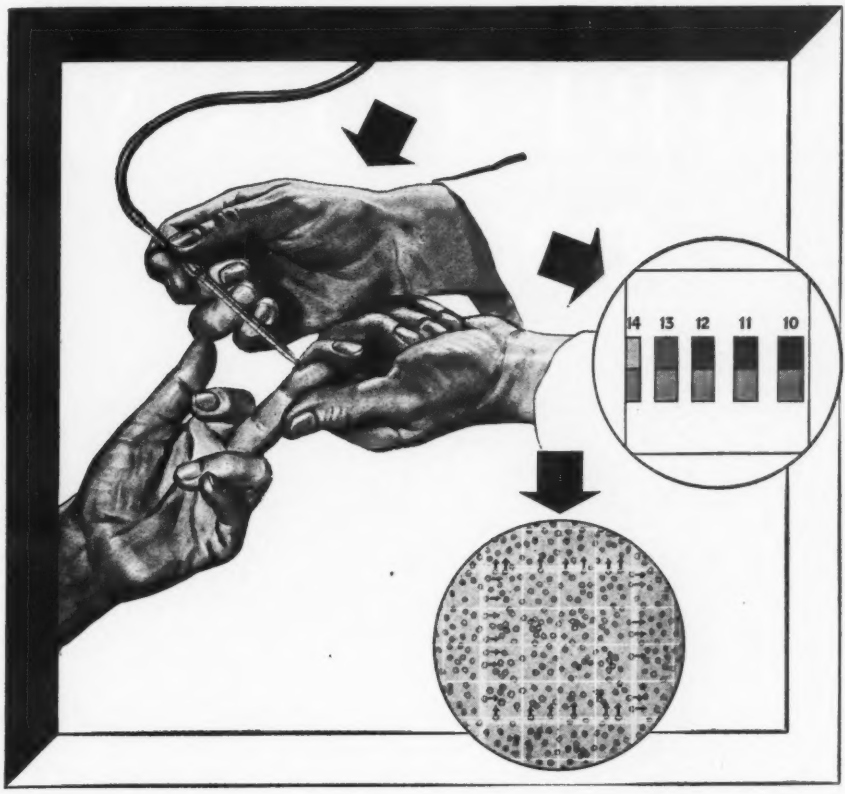

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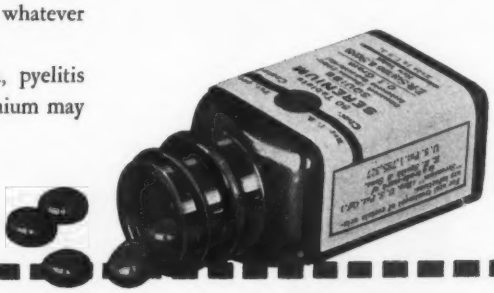

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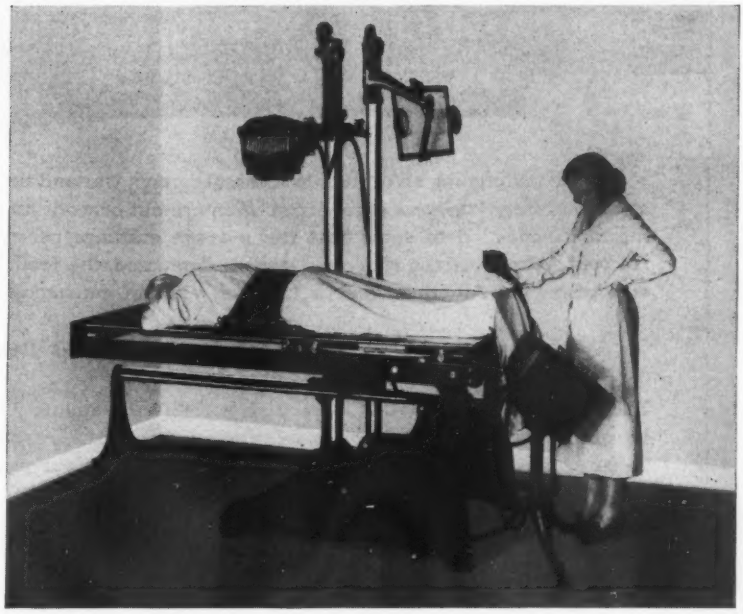

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Dear Mr. Picker:

This is to inform you that the Army and Navy are conferring upon your Cleveland, Ohio Plant the Army-Navy Production Award for high achievement in the production of war equipment.

The patriotism which you and your employees have shown by your remarkable production record is helping our country along the road to victory. The Army and Navy are proud of the achievement of the men and women of your Cleveland Plant.

In conferring this award, the Army and Navy will give you a flag to fly above the plant, and will present to every individual within the Cleveland Plant a lapel pin, symbol of leadership on the production front.

May I extend to the Picker X-Ray Corporation my congratulations for accomplishing more than seemed reasonable or possible a year ago.

Sincerely yours,

Robert P. Patterson
Under Secretary of War

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300 FOURTH AVENUE NEW YORK, NEW YORK
WAITE MANUFACTURING DIVISION, CLEVELAND, OHIO

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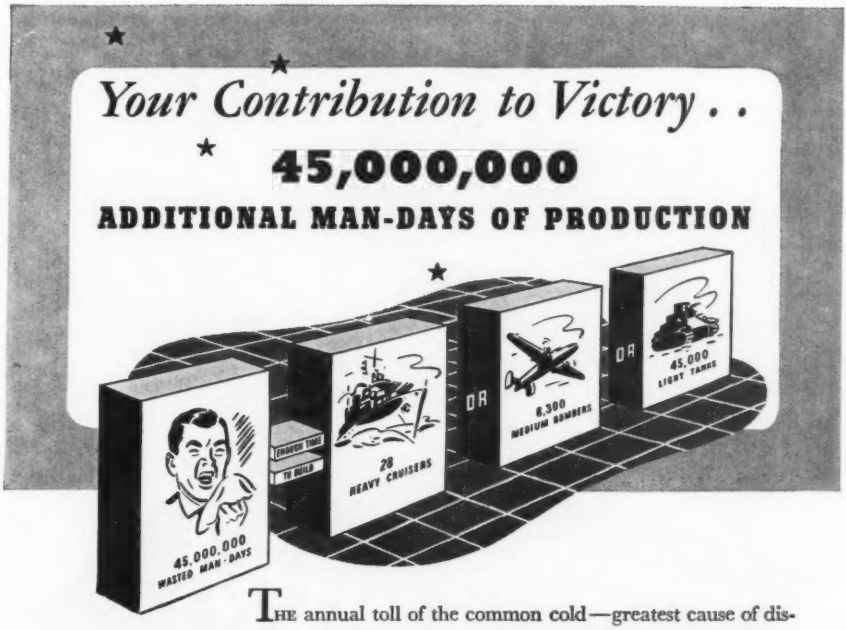

THE annual toll of the common cold—greatest cause of disability—is 45,000,000 man-days of working time. Therefore, the American Physician can make a tremendous contribution toward victory by protecting as many patients as possible against this prime saboteur of the nation's health.

ORAVAX

Brand of Oral Catarrhal Vaccine

Protects Against Colds

Controlled clinical studies, reported in current medical literature, demonstrate the effectiveness of *oral* vaccination with Oravax in reducing number, severity, and duration of colds. Reprints of these reports are available on request.

Oravax is inexpensive, painless, and free from severe reactions. Suggested dosage is one tablet daily for 7 days, then one tablet twice weekly throughout season when colds are most prevalent.

For your prescriptions, Oravax is available at the pharmacy in bottles of 20, 50, and 100 tablets.

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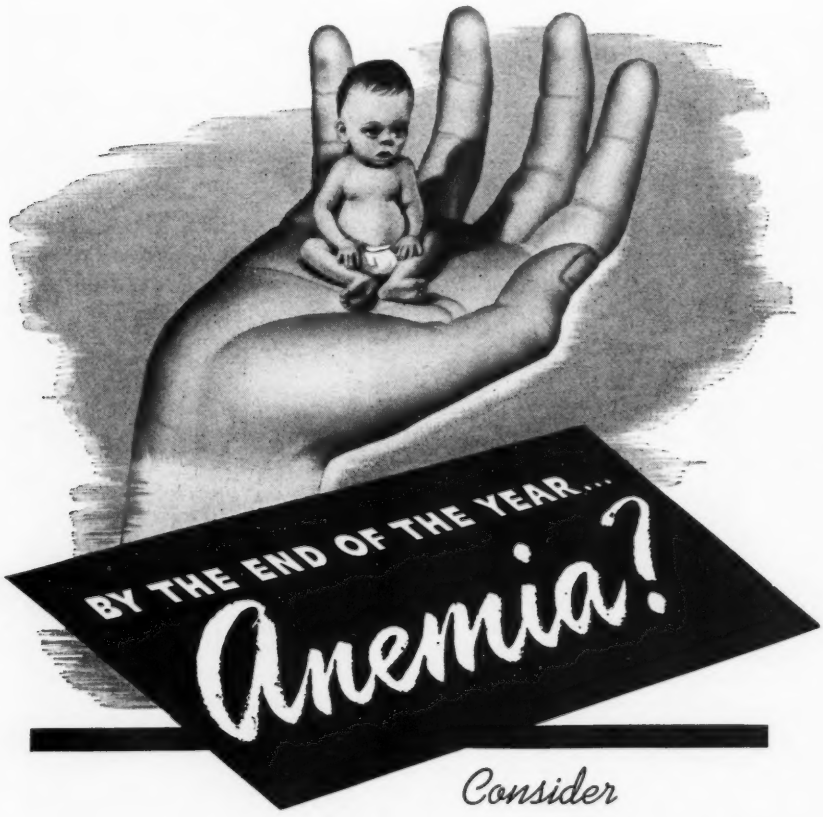
Founded 1828

Trade Mark "Oravax" Reg. U. S. Pat. Off.



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HEMATINIC PLASTULES*

The value of including liver extract with iron in treating secondary anemias in young children as well as adults has been demonstrated.[1] In addition to the changed blood picture, patients' appetites improve, irritability disappears, activity and alertness increase, and there is a rapid gain in weight. In such cases Hematinic PLASTULES with Liver Concentrate are of therapeutic value. Each Plastule contains the equivalent of 52½ grains of fresh whole liver. The iron content is 2.5 grains of dried ferrous sulfate U.S.P.X. per Plastule. Suggested dosage—2 PLASTULES three times daily. Supplied in bottles of 50, 100 and 1000.

1. Maurer, S., Greengard, J., and Kluver, C.: "The Value of Liver Extract and Iron in the Anemia of Young Infants." J.A.M.A. 98:1069:1932.

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THE BOVININE COMPANY • 8134 McCORMICK BOULEVARD, CHICAGO, ILL.

Will smallpox continue to decline in 1942?

SMALLPOX VACCINE

Lederle

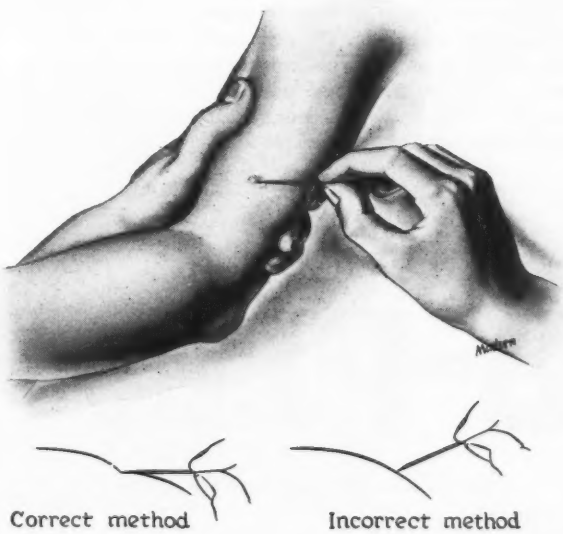
THE new "low" in smallpox incidence reached in this country in 1941 compares most favorably with the perennially high incidence reported in previous years:[1]

	1941	Median 1936-40
SMALLPOX . . .	1,368	9,574

However, we are still far too tolerant of this dangerous disease.

To avert the possible increase in the incidence of infectious diseases, which history has shown is fostered during war time, our government recently made the commendable move of advising the immunization of all children over 6 months of age against smallpox. The success of this program, however, depends on the cooperation of every practitioner, public health official and local governing body alike.

TOOMEY,[2] in a recent analysis of active immunity in smallpox, stressed the integrity of the immunizing agent and the proper technique of vaccination. Lederle now has available "Smallpox Vaccine *Lederle*" which has been further improved by the addition of Brilliant Green (reducing the bacterial count of the virus). The "take" with this product is quite satisfactory and its viability has not been diminished as compared with glycerinated vaccine cured without the dye.



Correct method Incorrect method

[1]Pub. Health Rep. 57:23,24 (Jan. 2) 1942.

[2]TOOMEY, J. A.: J. A. M. A. 119:18 (May 2) 1942.

PACKAGES

"Smallpox Vaccine *Lederle*" (U. S. P.)
1, 5 and 10 vaccinations

"Smallpox Vaccine *Lederle*" (Preserved with Brilliant Green)
1, 5 and 10 vaccinations

Supplied in glass capillary tubes, with sterile steel needle for each vaccination.

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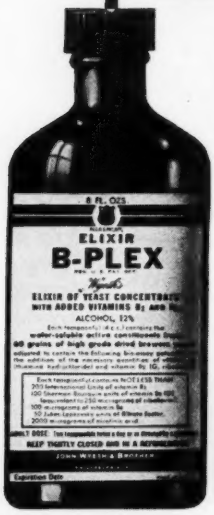

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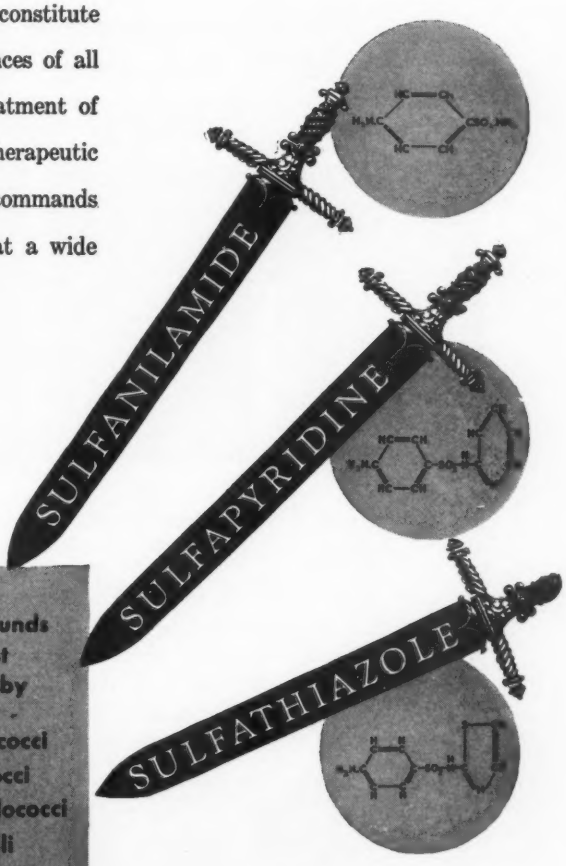
The introduction and clinical evaluation of these compounds constitute one of the greatest advances of all time in the chemical treatment of disease. In these chemotherapeutic agents the physician now commands potent weapons to combat a wide variety of conditions.



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Literature on Request

MERCK & CO. Inc. *Manufacturing Chemists* RAHWAY, N. J.

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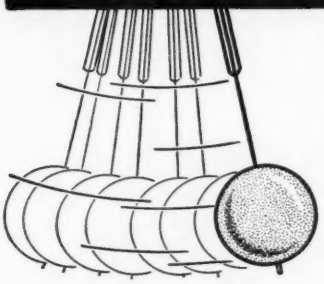

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The New Tablet Method

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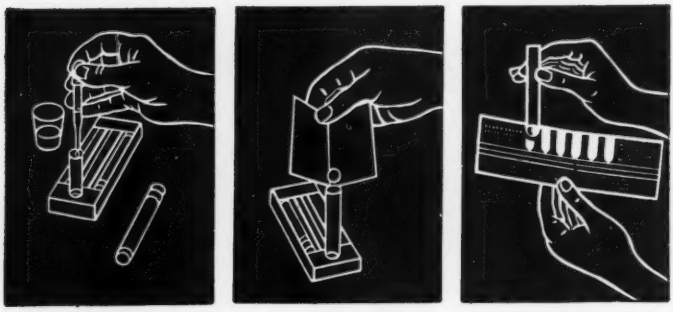
INVOLVES THESE THREE SIMPLE STEPS—



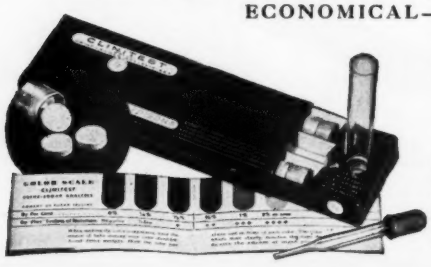
❶ 5 drops urine *plus* 10 drops water

❷ Drop in tablet

❸ Allow for reaction and compare with color scale

DEPENDABLE—CLINITEST Tablet Method is based on same chemical principles involved in Benedict's test—*except*—no external heating required, and active ingredients for test contained in a single tablet. Indicates sugar at 0%, ¼%, ½%, ¾%, 1% and 2% plus.

ECONOMICAL—Complete set (with tablets for 50 tests) costs patient only $1.25. Tablet Refill (for 75 tests)—$1.25.



Write for full descriptive literature

CLINITEST Urine-Sugar Test and CLINITEST Tablet Refill are available through your prescription pharmacy.

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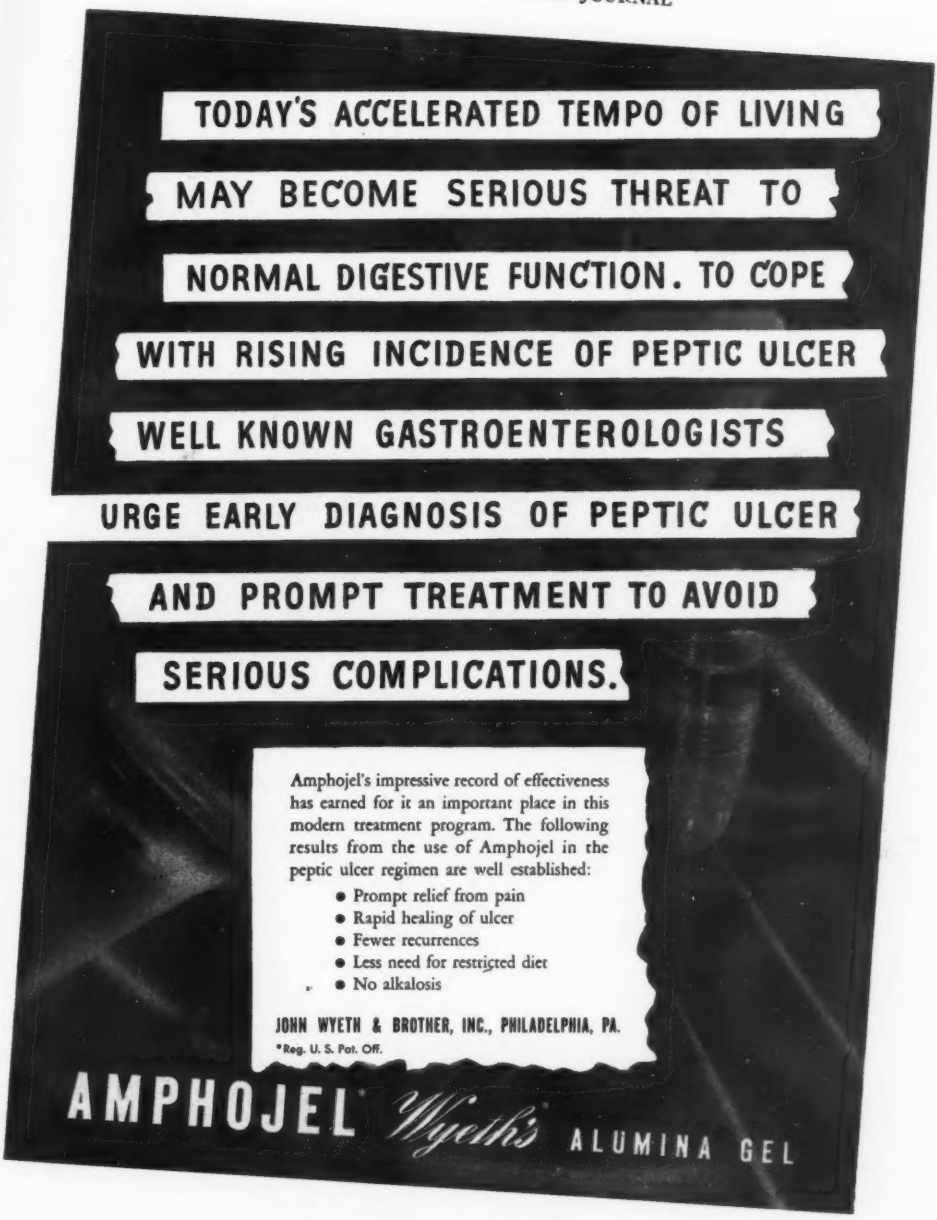
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MAY BECOME SERIOUS THREAT TO
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WELL KNOWN GASTROENTEROLOGISTS
URGE EARLY DIAGNOSIS OF PEPTIC ULCER
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Amphojel's impressive record of effectiveness has earned for it an important place in this modern treatment program. The following results from the use of Amphojel in the peptic ulcer regimen are well established:
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Whenever symptoms exist without apparent organic illness —

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Phenobarbital . . . . ¼ gr.
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The colloidal character of the sulfur in SOLFOTON is produced under the protection of U. S. Patent 1,934,989.

Suggested Dosage
One tablet before or after meals and at bedtime for at least a two-weeks period.

SOLFOTON, for over ten years, has been remarkably effective in relieving functional symptoms. Many physicians prescribe SOLFOTON to all patients not acutely ill and in whom diagnosis will likely require an extended study. By that method, the anxiety, nervous tension, and functional symptoms may be relieved during the diagnostic period, and, through removal of the confusing functional symptoms, the organic basis, if any, of the illness may be more easily and quickly determined.

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Aluminum hydroxide gel is accepted therapy in the management of peptic ulcer . . . Its impressive record of effectiveness suggested the development of an alternate aluminum preparation to meet particular requirements in certain cases.

Phosphaljel, Wyeth's Aluminum Phosphate Gel, was originated by Wyeth and was used experimentally in the first successful attempt to prevent postoperative jejunal ulcer in Mann-Williamson dogs. Some animals were allowed to develop Mann-Williamson ulcers and the effectiveness of Phosphaljel was further demonstrated when its administration was followed by prompt healing of these lesions in every case.[1]

In man, Phosphaljel was found to be most effective in peptic ulcer following gastrojejunostomy, a condition which appears to be analogous to the Mann-Williamson ulcer in dogs.[1]

These results suggest that Phosphaljel is indicated in those cases of peptic ulcer associated with a relative or absolute deficiency of pancreatic juice, diarrhea or a low phosphorus diet.

The suggested dosage of Phosphaljel is one, or occasionally, two tablespoonfuls every two hours during the active stage of the ulcer. Later in the course of management, three tablespoonfuls with meals and at bedtime or two tablespoonfuls six times daily with or between meals is recommended. Wyeth's Aluminum Phosphate Gel is supplied in twelve fluid ounce bottles and is available at all pharmacies.

[1] *Fauley, G. B.; Freeman, S.; Ivy, A. C.; Atkinson, A. J., and Wigodsky, H. S.: Aluminum Phosphate in the Therapy of Peptic Ulcer, Arch. Int. Med.* **67**: *563-578 (March) 1941.*

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Wyeth's Aluminum Phosphate Gel

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POTENCIES UP!

NO increase in price!

● VITAMINS B_1-B_2(G)-C SUBSTANTIALLY *increased*

● NIACINAMIDE, important B Complex member, *added*

VI-SYNERAL is an excellent vitamin-mineral dietary supplement—in step with advancing nutrition research.

VI-SYNERAL is personally used and widely recommended by physicians because of its effectiveness and because it is *now* conceded that deficiencies in vitamins and minerals are usually multiple. *We* have pioneered multiple vitamin-mineral therapy since 1935.

VI-SYNERAL contains:

VITAMINS: A-B_1-B_2(G)-C-D-E-Niacinamide and B Complex factors.

MINERALS: Calcium, Phosphorus, Iron, Iodine, Manganese, Magnesium, Copper, Zinc.

. . . in a separate Funk-Dubin balance for each age group: (1) ADULTS, (2) INFANTS and CHILDREN—up to 6, (3) CHILDREN and ADOLESCENTS—6 to 16, (4) EXPECTANT and NURSING MOTHERS, and (5) SPECIAL GROUP (Middle-aged and Aged).

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VITAMINS ALONE ARE NOT ENOUGH!

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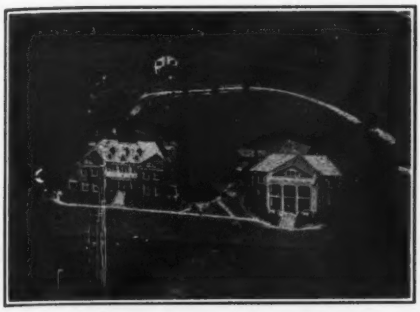
VI-SYNERAL SUPPLIES BOTH!



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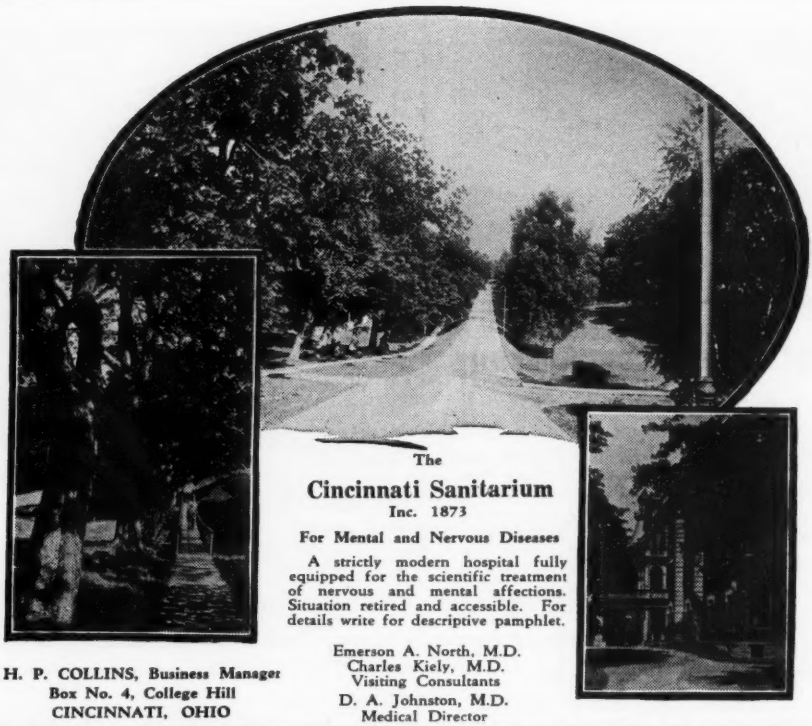

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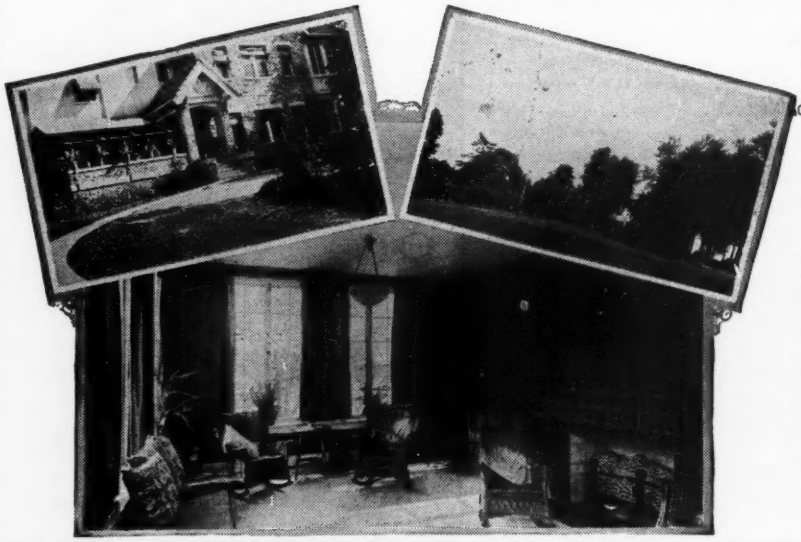

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Completely equipped for hydrotherapy, massages, etc.

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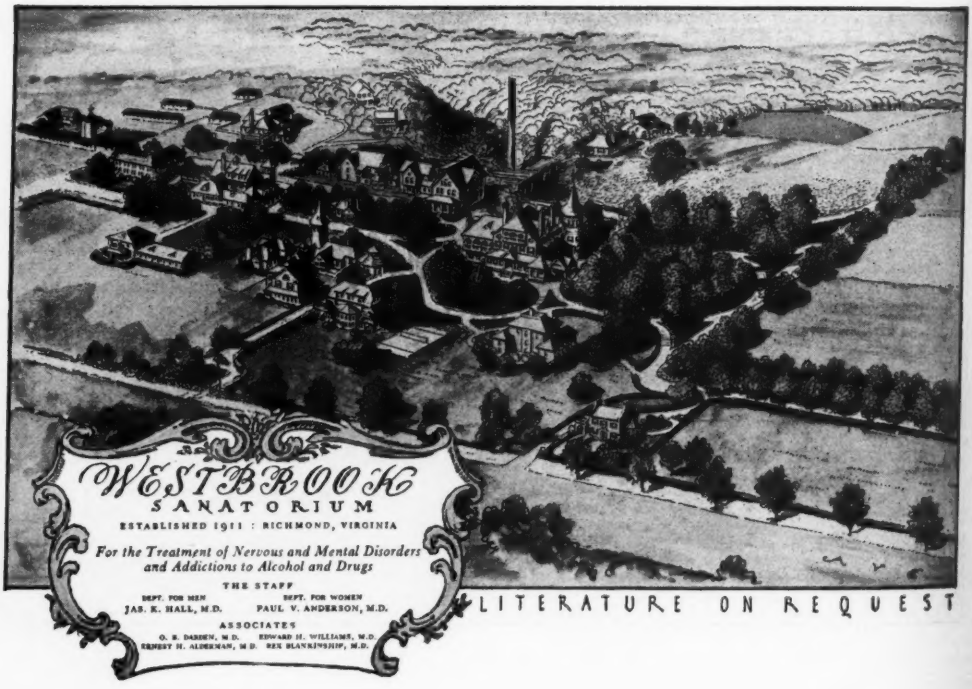
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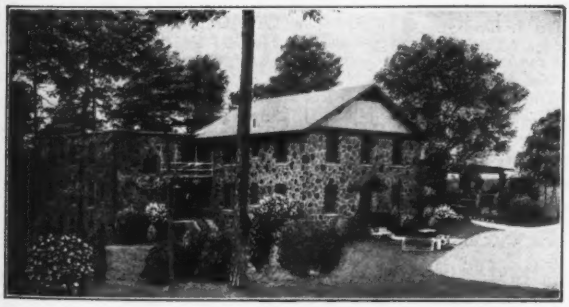

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THE GEOGRAPHIC PATHOLOGY OF ST. LOUIS ENCEPHALITIS*

By ALBERT E. CASEY, M.D.
Birmingham, Alabama

Certain peculiarities were noted in the geographic distribution of an encephalitis of a distinct type, which appeared in the city of St. Louis and in St. Louis County in 1933 and 1937.[1] The disease was concentrated in the vicinity of the small sewage streams, in areas marked by weeds, tin can dumps, ponds, and in communities with sewage in the open ditches. The disease began at a number of widely separated points almost simultaneously; remained most concentrated in the same areas throughout both epidemics; no areas which were significantly spared in the first epidemic were significantly affected in the second; and in each epidemic the disease appeared in July and disappeared with the advent of cold weather; clinical cases were not recognized in the interim. The similarity to such a mosquito borne disease as equine encephalomyelitis was pointed out.†

The present communication describes the methodology of the original study in the St. Louis area and offers evidence that the disease was not spread along the traveled highways, boulevards, interstate railways or navigable streams. It also compares the distribution of this disease with that of measles and scarlet fever; demontrates that the congestion and the immunity of the population were not major factors in the peculiar geographic distribution. The essential feature of the study was the employment of control series by means of which certain variables could be eliminated or held constant, and the analysis of the material by the use of standard biometric procedures.

MATERIALS AND METHODS

On the premise that a control series in an epidemiologic study should differ in no respect from one employed in experimental work, control cases were sought which should resemble the encephalitis patients in every respect, except the presence of the encephalitis.

Race and Sex.—In the absence of race and sex bias,[6] no control for these factors seemed necessary.

Age.—In both epidemics, 83 per cent of the persons who had the disease in a clinically recognized form were 20 years of age and over and the incidence was highest in persons over 50 years of age. A co-efficient of correlation between the age distribution of the encephalitis patients in 1933 and 1937 was statistically significant (+0.915). It was found that the age distribution of the total population of St. Louis and St. Louis County (U. S. Census 1930) was not significantly correlated with that of the encephalitic patients (+0.341). The only available human population in the area, which was significantly correlated with the age distribution of the encephalitis patients was the mortality population of persons over one year of age. When deaths of children over one year of age were eliminated, it was found that the age dis-

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*This study was made possible by the cooperation and assistance of the St. Louis County Health Department and of Dr. J. Earl Smith, Epidemiologist, and Mr. Elmer Rosenthal, Registrar, of the St. Louis Health Division.

†An unpublished report on the original epidemic of 1933 in the entire mid-western area of the United States has come to our attention since our studies of the 1933 and 1937 epidemics in the St. Louis area, and it has become available to us since the presentation of this paper in St. Louis[2]. This report suggested mosquitoes, particularly Culex pipiens and Culex quinquefasciatus, as the carriers of St. Louis encephalitis in 1933. Mitamura and co-workers reported the transmission in the laboratory of St. Louis encephalitis with Culex pipiens[3]. More recently the virus of St. Louis encephalitis has been recovered from Culex tarsalis mosquitoes trapped in an epidemic in the Yakima Valley in Washington[4,5].

tribution of persons dying from all causes in St. Louis and St. Louis County was significantly correlated with that of encephalitis patients in the years 1933 and 1937 (+0.679). Sampling correlations between the mortality population of 1933, 1935 and 1937 revealed no significant differences.

Selection of Encephalitis and Mortality Control Samples.—The data on the mortality population for 1933, 1935 and 1937 and on the encephalitis cases in 1933 and 1937 were taken from the official records in the St. Louis County and St. Louis City Health Departments‡. The year 1935 was midway between the epidemic years of 1933 and 1937 and in it no cases of St. Louis encephalitis were reported. For this reason, it was selected for the mortality sample.

Selection of the mortality sample was necessary because it was impractical to plot the more than 15,000 deaths for 1935. To accomplish this, there were chosen all persons 5, 15, 25, 35, 45, 55, 65, 75, 85 and 95 years of age, who had died in St. Louis or St. Louis County in the year 1935. The sample thus selected totaled 1,214. Because this sample gave only 267 control cases for St. Louis County, two additional samples were selected for St. Louis County.

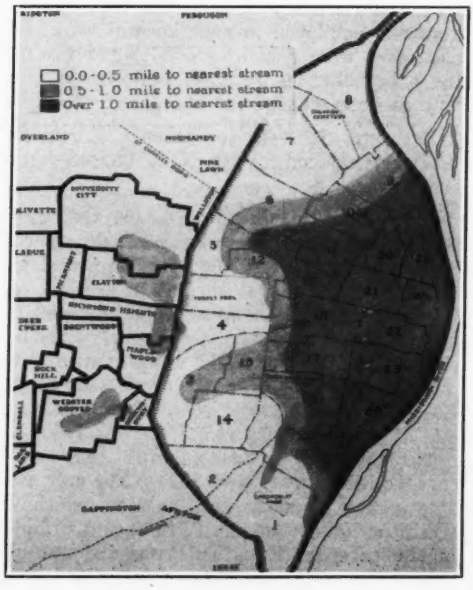

Fig. 1
Portions of St. Louis and St. Louis County within certain distances of the nearest small non-navigable streams.

These consisted of all residents of St. Louis County who died in 1935 and were 6, 16, 26, 36, 46, 56, 66, 76, 86 and 96 years of age and all such persons who were 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 years of age. There were 523 persons in the combined sample. There were no statistically significant variations between the original and the new samples in their distribution for either the incorporated or the unincorporated communities in St. Louis County. The systematic erection of circles of one-half mile in diameter throughout the county, failed to reveal areas which were significantly variable in the three samples. The additional samples produced a more effective control for sparsely settled St. Louis County which had a preponderance of the encephalitis.

Plotting.—The fact that the disease affected both sexes equally seemed to indicate that its transmission was chiefly in places in which equal opportunities were available for both sexes to be affected. This fact, plus the fact that the clinical disease affected elderly individuals to a large extent, suggested the neighborhood of the home as the place in which transmission possibly occurred. The use of home addresses was therefore employed for both the encephalitis patients and for the controls. The home addresses of the 1,130 persons who had the encephalitis in 1933 and of the 518 persons who had the disease in 1937 were plotted on similar maps; also on similar maps were plotted the home addresses of the 1,214 persons in the mortality sample for St. Louis and St. Louis County, and in a different color were plotted the 523 addresses of the two accessory control samples for St. Louis County.

Method of Comparing Control and Encephalitis Populations.—In order to compare the distribution of the control and encephalitis populations, the chi-square test was employed.[7] The purpose was to determine whether there existed in the area, places where (1) the encephalitis population was more concentrated than would be expected to occur by accident, and (2) the encephalitis population was more scarce than should occur by accident (P.—0.05, probably significant; P.—0.01, significant). These places were to be termed foci of concentration and foci of scarcity, respectively. The minimum sample of either the control or encephalitis population was such that the calculated expected population in the place in question be at least 5 or more. The places were of various kinds: (1) the districts in St. Louis

and towns and villages of St. Louis County, (2) the areas of scarcity and concentration which were independent of such political subdivisions as districts, towns and villages, (3) the environs of routes of travel such as navigable streams, boulevards, national highways, railroads, (4) the environs of non-navigable streams, weed areas, ditches, ponds or streams containing sewage.

Districts, Towns and Villages.—The outlines of the districts, towns and villages as were found on standard maps of the area were employed.

Areas Independent of Political Subdivisions.—The sampling was effected by the systematic erection of an almost infinite variety of circles having identical centers and radii on control and encephalitis maps, and counting the number of encephalitis and control cases encompassed in such circles. The smallest circular areas showing significant (P.—0.01) departures from the expected were outlined.

Environs of Routes of Travel.—An enumeration was made in the following four categories: (1) The cases of encephalitis which occurred in the neighborhood of the route of travel, (2) the control cases in the same area, (3) the cases of encephalitis within a designated distance away from the route of travel, and (4) the control cases in the same area. Chi-square was then calculated. The highways were United States highways 30, 40, 50, 61, 66, 67, 77, 99 and 140 in St. Louis County (no others were listed); the neighborhood of the highway was defined as that area within the first half mile of the highway, and the area away from the highway as that within the second half mile of the highway. The boulevards studied in the city of St. Louis were: Grand, Kingshighway, Broadway, Watson Road, Chippewa, Gravois Road, Manchester Avenue, Choteau, Market, Lindell, Page, Natural Bridge and Florissant; the neighborhood of the boulevard was defined as that of the boulevard and within the first blocks of the intersecting streets; the designated distance away from the boulevard was defined as the area of the second distant streets parallel to the boulevard and between the second and third blocks distant from them. The Mississippi River was the only navigable stream in the St. Louis area other than the Missouri River, the data for which were too scattered and inadequate to permit proper analysis of the cases along it; the neighborhood of the Mississippi River was defined as the area within the first half mile of it; the designated distance away was defined as the area within the second half mile of the Mississippi River. The railroads were the Chicago, Burlington and Quincy, the Terminal Belt Line, the Missouri Pacific, the St. Louis and San Francisco, the Chicago, Rock

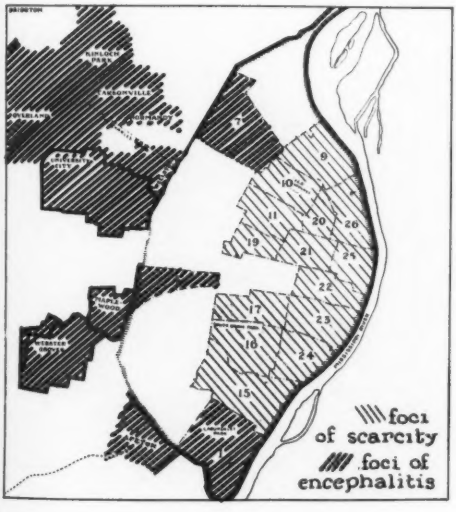

Fig. 2
Distributon by districts of cases of St. Louis encephalitis in St. Louis and St. Louis County in 1933.

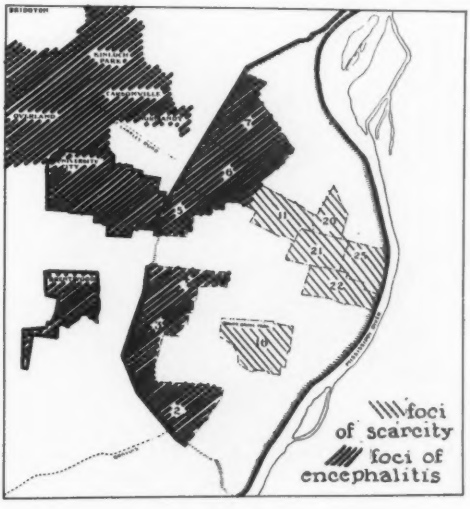

Fig. 3
Distribution by districts of cases of St. Louis encephalitis in St. Louis and St. Louis County in 1937.

Island and Pacific, the Wabash, the St. Louis, Iron Mountain and Southern, and the St. Louis, Oak Hill and Carondelet; the railroad yards in the central portion of the city were included in the study, but other railways which cross the Mississippi River and enter immediately into the central yards could not be investigated individually; the neighborhood of the railroad was defined as the area within the first half mile of, and the distance away from as the area within the second half mile of the railways in St. Louis and St. Louis County. All tracks of all railroads were included in the study. Overlying data, which were not frequent, were treated as follows: such encephalitis or control cases as occurred within the first half mile of the railroad under consideration and were also within a half mile of some other railroad were included. Such encephalitis or control cases as occurred within the second half mile of the railroad under consideration and were also within the first half mile of some other railroad were not included. A similar plan was followed with regard to the boulevards, highways and navigable streams studied in this analysis, and also with regard to the non-navigable streams in the paragraph below.

Environs of Non-Navigable Streams, Weeds, Ditches, Open Sewerage.—No maps were found to be reliable as to the actual status of small streams in 1937, or of weed patches, open sewerage, etc. The author personally examined every block in St. Louis and St. Louis County and plotted on large maps the conditions of the premises in the fall and winter of 1937. Streams were found not included on recent maps, and sewage in the open ditches about the premises was the rule rather than the exception among unincorporated places (Wellston and Oakland were over 10,000) in St. Louis County. St. Louis City sewerage emptied into an open stream, the River des Peres, and this meandered sluggishly throughout a large portion of the city (*Figs. 5* and *7*) and was blanketed throughout its course by weed areas. All small streams carried sewage in St. Louis and St. Louis County. With the exception of two isolated strips all areas in St. Louis County were within a half mile of a small non-navigable stream (*Fig. 1*). One strip extended north and south across a portion of University City, Clayton, Richmond Heights and Maplewood. The second strip extended generally east and west across a portion of Shrewsbury and Webster Groves. These strips were among the most thickly settled areas in St. Louis County. In St. Louis the streams were River des Peres, Maline, Gingras and X Creeks and their tributaries (*Figs. 5* and *7*). An unnamed creek (designated as X in this

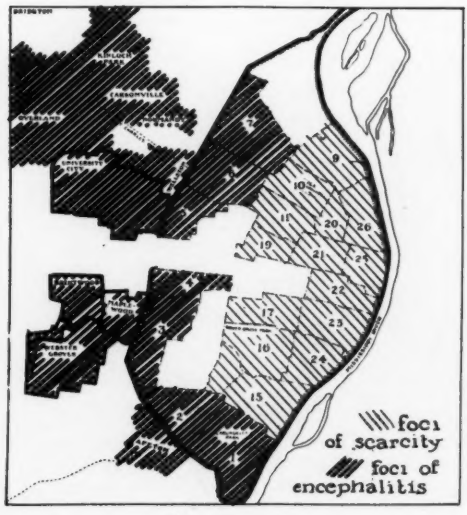

Fig. 4

Distribution by districts of St. Louis encephalitis in St. Louis and St. Louis County in the epidemics of 1933 and 1937.

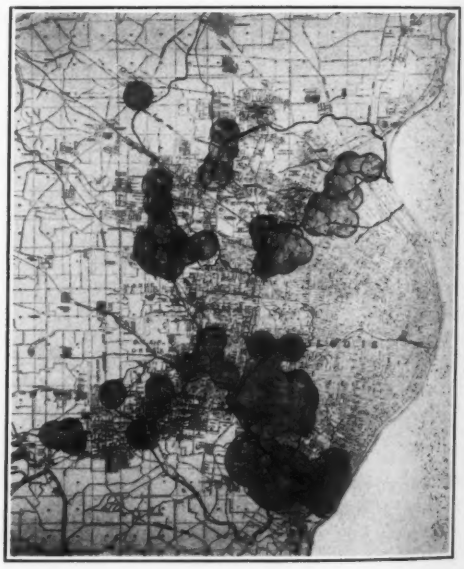

Fig. 5

Foci of St. Louis encephalitis in St. Louis and St. Louis County in 1933, calculated without regard to political subdivisions.

study) which originally ran from the Mississippi River between O'Fallon Park and Bellefontaine Cemetery divided at the cemetery into two branches. One branch followed the bed of what is now the Terminal Belt Line in north St. Louis. The other ran some blocks to the south. Both branches continued into St. Louis County in the Wellston area. In 1937 this stream had been largely covered over except for a distance within a few blocks of the city limits and a distance within a few blocks of Bellefontaine Cemetery. Several ponds existed along the covered portions. An uncharted branch of the River des Peres extended into the Oakland District near Dale and Sanford Avenues, at their junction with Manchester Road, and northwest almost to McCausland Avenue. Several small branches of Gingras Creek in northwest St. Louis contained water in 1937, although they were not plotted on some recent maps. Four square tables were prepared, on which were listed respectively: (1) the cases of St. Louis encephalitis which occurred within the first half mile of any stream or its tributaries, (2) the control cases in the same area, (3) the cases of the disease which occurred within the second half mile of any stream or its tributaries, and (4) the control cases in the same area. Chi-square was calculated from the actual and expected values in each category.

RESULTS

Certain districts in the St. Louis area had a significant concentration and others a significant scarcity of the encephalitis in the epidemics of 1933 and 1937 (*Figs. 2* and *3*). No areas had a significant scarcity in one epidemic and a significant concentration in the other, or, vice versa; this made it possible to plot the districts and communities which were significantly variable in either epidemic (*Fig. 4*). The areas of concentration and of scarcity were contiguous, orderly in character, and relatively constant for the two epidemics. The unincorporated communities were more affected than the incorporated communities.

The areas with significant concentration of encephalitis were plotted independently of political subdivisions (*Figs. 5* and *6*). These areas were about half in and about half out of the St. Louis city limits and seemed to bear no relation to community boundaries. Since no areas were spared in one and affected in the other epidemic the foci of concentration were plotted for the two epidemics (*Fig. 7*).

There was no significant concentration of the

Fig. 6

Foci of St. Louis encephalitis in St. Louis and St. Louis County in 1937, calculated without regard to political subdivisions.

Fig. 7

Foci of St. Louis encephalitis in St. Louis and St. Louis County for the combined epidemics of 1933 and 1937, calculated without regard to political subdivisions.

encephalitis along the routes of travel (interstate railroads, motor highways, boulevards, navigable streams) (*Table 1*). In fact, the control and encephalitis populations were so evenly distributed with regard to these areas (and even to individual highways, boulevards and railroads) that there was a statistically significant evidence of low sampling error. This would indicate that the mortality sample was an excellent control.

St. Louis encephalitis was significantly more concentrated along the terminal belt line in St. Louis City (x^2 7.33; P.—0.01) and along the same local railroad in St. Louis County (x^2 3.97; P.—0.5) (*Table 1*).

The River des Peres and its tributaries in St. Louis south of Forest Park were studied separately (*Table 2*). St. Louis encephalitis was significantly more concentrated within the first half mile of the stream and its branches than within the second half mile (x^2 —36.12; n—1; P.—0.01, significant). The chance of the accidental occurrence of such a result is less than one in a million.

The River des Peres and its branches in St. Louis north of Central Park were also studied separately (*Table 2*). Again the encephalitis was significantly more concentrated within the first half mile of this stream and its branches than within the second half mile (x^2 —8.76, n—1, P.—0.01, significant).

The Maline, Gingras and X Creeks and their tributaries in St. Louis were studied separately (*Table 2*). The disease was significantly more concentrated within the first half mile of these streams than within the second half mile (x—4.75, n—1, P.—0.05, probably significant).

The two isolated strips within the second half mile of the nearest creeks in St. Louis County, as already described (*Fig. 1*), were first studied in relation to their respective communities, and then were combined and studied in relation to the other encephalitis and control cases in St. Louis County which were within a half mile of the nearest stream (*Table 1*). Again it was observed that St. Louis encephalitis was significantly concentrated within half a mile of the small streams (x—12.87, n—1, P.—0.01, significant). The chance of the accidental occurrence of such a result is not more than one in every ten thousand.

DISCUSSION

It is extremely significant that the same method which disclosed no concentration whatsoever of St. Louis encephalitis along routes of travel in St. Louis and St. Louis County revealed a uniform and invariably significant concentration of the disease along all the small streams of both the city and county.

The encephalitis, it will be recalled, was significantly concentrated in both the city and the county along the Terminal Belt Railroad wherever this railroad did not coincide with the in-

Distribution of St. Louis Encephalitis Along Routes of Travel in St. Louis and St. Louis County

	On	Off	Total	On	Off	Total		
Mississippi River	58	113	171	75	163	238	X^2	0.26
	55.61	115.39	171	77.39	160.61	238	P	0.6
Boulevards, City	196	160	356	251	201	452	X^2	0.02
	196.95	159.05	356	250.05	201.95	452	P	0.9
Highways, County	291	188	497	125	72	197	X^2	0.43
	294.77	184.23	497	121.23	75.77	197	P	0.5
Railroads, City	341	226	567	356	276	632	X^2	1.66
	329.61	237.39	567	367.39	264.61	632	P	0.2
Railroads, County	299	129	428	122	61	183	X^2	0.58
	294.91	133.09	428	126.09	56.91	183	P	0.4
Terminal Belt Line, City	40	62	102	12	51	63	X^2	7.33
	32.15	69.85	102	19.85	43.15	63	P	0.01—
Terminal Belt Line, County	51	38	89	14	23	37	X^2	3.97
	45.91	43.09	89	19.09	17.91	37	P	0.05—

Upper figures, actual values; lower figures, expected values.

Table 1

terstate roads. An examination of the 1937 route of the Terminal Belt Railroad revealed that the St. Louis County division followed the stream beds of the River des Peres and X Creek in the areas in which the concentrations of the disease had been found; similarly the St. Louis city division also followed the stream bed of X and Gingras Creeks. The right-of-way of the Terminal Belt Railroad in 1937 was covered with weeds, in contrast to that of the interstate railroads which were well kept, and the tracks of which did not follow the beds of the small streams. The Terminal Belt Line is used for switching freight and not for human travel. It may be concluded that the significance of the concentration of encephalitis lies with the stream beds rather than with the Terminal Railroad.

The mathematical exactness of the distribution of the control and encephalitis samples along the routes of travel indicated the excellency of the controls used. As an additional control, using a living population, the reported cases of measles in St. Louis for the epidemic years of 1934 and 1937 (which most nearly correspond to 1933 and 1937, the years of epidemic encephalitis) were used as controls. Studies of the distribution of the encephalitis by districts in relation to measles (and scarlet fever) reveal the same areas of preponderance and scarcity of the encephalitis as when the mortality sample was used as a control (x^2—269.97, n—25, P.—0.01, significant). The use of another and a contagious virus disease shows that the factors of transmission of St. Louis encephalitis were different from the factors of transmission of measles in the same city. Measles is usually concentrated in the most congested district.

In order to check the relation of the encephalitis to the congestion, the thirteen most congested and the thirteen least congested of the twenty-six city districts were determined on the basis of the population per square mile (official records). The twenty-six districts were considered twice, first for the year 1933 and sec-

Incidence of St. Louis Encephalitis Along the Small, Non-Navigable Streams of St. Louis and St. Louis County

	Encephalitis Cases			Control Cases			
	On*	Off*	Total	On*	Off*	Total	X^2
1. Actual	187	74	261	72	97	169	
Expected	157.21	103.79	261	101.79	67.21	169	36.12
2. Actual	52	24	76	15	23	38	
Expected	44.67	31.33	76	22.33	15.67	38	8.76
3. Actual	132	73	205	67	61	128	
Expected	122.51	82.49	205	76.49	51.51	128	4.75
4. Actual	126	34	160	156	73	229	
Expected	115.96	44.04	160	166.04	62.96	229	5.37
5. Actual	39	4	43	67	9	76	
Expected			(Off* sample insufficient for analysis)				
6. Actual	681	38	719	717	82	799	
Expected	662.16	56.84	719	735.84	63.16	799	12.87
Total St. Louis City and County:							
Actual	1052	209	1261	871	263	1134	
Expected	1012.5	248.5	1261	910.5	223.5	1134	16.51

*On, within the first half-mile of the nearest stream.

Off, within the second half-mile.

(1) Encephalitis and control cases in St. Louis in relation to the River Des Peres and its branches in south and southwest St. Louis. (2) The same in relation to the River Des Peres and its branches north and northwest of Forest Park in St. Louis. (3) The same in relation to Maline, Gingras and X creeks and their tributaries in St. Louis. (4) The same in relation to the tributaries of the River Des Peres in the communities of University City, Clayton, Richmond Heights and Maplewood in St. Louis County. (5) The same in relation to the tributaries of the River Des Peres in Shrewsbury and Webster Groves in St. Louis County. (6) The same in relation to all small streams in St. Louis County. (Note that this survey includes all small streams in St. Louis County. The only areas more than one mile distant from the nearest small stream were in St. Louis City.)

Table 2

ond for the year 1937. The relationship is shown in the following tabulation:

ENCEPHALITIS IN 1933 AND 1937
(DISTRICTS USED TWICE)

Districts	Prevalent	Scarce	Indefinite	Total
Most congested				
Actual	3	14	9	26
Expected	3.5	10.5	10.0	26.0
Least congested				
Actual	8	7	11	26
Expected	5.5	10.5	10.0	26.0
Total				
Actual	11	21	20	52
Expected	11.0	21.0	20.0	52.0

There was no correlation between St. Louis encephalitis and the congestion of the population. On the contrary, the analysis suggests that the disease tends to be associated with the areas of least congestion (x^2—4.806, n—2, P.—0.09, suggestive but not significant).

St. Louis encephalitis has been shown, up to this point, to be significantly concentrated within the first half mile of small streams as compared with the concentration within the second half mile of these streams. The only areas in either St. Louis or St. Louis County which were more than a mile from the nearest small stream were in central and downtown St. Louis. Here the distances from the nearest small streams ranged from one to five miles. An analysis of the relative concentration of the disease within the first half mile, the second half mile and finally in areas more than a mile from the nearest small stream was made (*Table 3*). Sixty-four per cent of the cases of encephalitis in the two epidemics were found to have occurred within the first half mile of the nearest small stream, whereas only 33 per cent of the population resided in this area. It was further found that 76.5 per cent of the cases of encephalitis had occurred within the first mile whereas only 49.6 per cent of the general population resided within this area. On the other hand, only 23.5 per cent of the cases of encephalitis occurred more than a mile from the nearest small stream, whereas 50.4 per cent of the population lived at this distance. The rate of encephalitis adjacent to the small streams was thus more than four times the rate for the areas more than a mile removed and three times the rate for the area more than half a mile removed. This concentration along small streams was true for both epidemics.

In order to check the significance of the concentration of St. Louis encephalitis near small streams, it was necessary to determine whether all concentrations of the disease were so related. To demonstrate this, circles with radii of one-half mile were constructed systematically over the entire area of St. Louis and St. Louis County on maps on which were plotted both control and encephalitis cases. The number of cases in each group was listed for each circle and the statistical significance of the sample variations was calculated (*Figs. 5, 6* and *7*). It was found, with one single exception, that the extreme limits of every area of preponderance were within half a mile of the nearest stream. In the single exception, the extreme limit of the area was less than a mile from the nearest stream (*Fig. 7*). Furthermore, there were no foci of concentration of the encephalitis in either the city or the county which were not related to the small streams. On the other hand, every significant area of scarcity was more than a mile from the nearest small stream. The areas or preponder-

Distribution of St. Louis Encephalitis in Relation to Small, Non-Navigable Streams in St. Louis and St. Louis County Encephalitis Population (City and County)

Distance (miles)	Cases	Per Cent	Control Sample	Estimated Population	Population Per Cent	Rate of Encephalitis Per 100,000
0.00-0.49	1052	63.8	397	338,006	32.7	31.12
0.50-0.99	209	12.7	205	174,537	16.9	11.97
1.00-5.00	387	23.5	612	521,057	50.4	7.43
Total	1648	100.0	1214	1,033,600	100.0	

Table 3

ance were contiguous and were relatively the same for the two epidemics, and the same is true of the areas of scarcity. There was universal presence of weeds and tin can dumps along the small streams and the almost universal presence of sewerage in them. In the fall of 1937, the author, with this possibility in mind, examined every block and every portion of every block in the city of St. Louis and St. Louis County, and plotted on maps all ponds, tin can dumps, weeds, etc., which were observed. No feature except the presence of weeds and of small sewage streams was recognized as constantly associated with the concentration of the encephalitis in the two epidemics.

The presence of weeds, ponds and tin can dumps in relation to the concentration of the encephalitis offers a perplexing problem. It can as well be argued, from the evidence submitted, that it was the presence of the weeds rather than of the small streams which was related to the concentration of the disease. In fact, in northern St. Louis, where the disease was concentrated along the Terminal Belt Line, there was a stretch of almost two miles in which the stream bed had been covered up but along which the weeds grew abundantly.

According to one theory St. Louis encephalitis affected elderly people on the edge of the city because it was a contagious[8] disease which had been endemic in the heart of the city. If this were true, many, if not most, elderly people in the heart of the city would have been immune. A study of the age distribution of the encephalitis cases, however, proves this idea not to be tenable. The data for the 1933 epidemic were not in a readily usable form, but the age distribution of cases and the controls in the 1937 epidemic for the districts with a preponderance and those with a scarcity could be tabulated (*Table 4*). There was no significant difference in the age distribution of the encephalitis population in the areas of scarcity and of preponderance, nor were there variations in the age dis-

Comparison of the Age Distribution of St. Louis Encephalitis and the Controls (Mortality Sample) in Districts of Preponderance and Scarcity

Encephalitis Cases						
	Actual Cases			Expected Values		
Age Grouping	Preponderance	Scarcity	Total	Preponderance	Scarcity	d2/m
0-19	20	22	42	22.87	19.13	0.79
20-39	27	25	52	28.31	23.69	0.13
40-59	53	34	87	47.37	39.63	1.46
60-79	50	44	94	51.18	42.82	0.06
80-99	3	3	6	3.29	2.73	0.05
Total	153	128	281	153.00	128.00	
			(n-4, P-0.5; not significant)			
Control Cases						
0-19	5	25	30	6.52	23.48	0.45
20-39	20	82	102	22.17	79.83	0.27
40-59	46	213	259	56.29	202.71	2.40
60-79	94	276	370	80.42	289.58	2.94
80-99	13	45	58	12.61	45.39	0.01
Total	178	641	819	178.00	641.00	
			(n-4, P-0.2; not significant)			

Table 4

tribution of the mortality control population for the same districts. In fact, the tendency, although not significant, was for older persons to be affected in larger numbers in the areas of scarcity, which suggested that endemicity, if it existed at all, was situated in the areas of preponderance.

CONCLUSIONS

St. Louis encephalitis was found to be significantly distributed along the small streams in St. Louis and St. Louis County, all of which carried sewerage, and in areas characterized by weeds and garbage dumps; and it was significantly scarce in both epidemics in those areas not characterized by weeds, open sewage and ponds. Using an adequate control series and biometrical methods, no foci were found along the most traveled highways in St. Louis County, along the principal boulevards in St. Louis, along the interstate railroads, and there was no relation of the disease to congested housing. There was no evidence that in 1937 the population in the heart of the city where the disease was significantly scarce contained more immune persons than were to be found in the areas of greatest concentration of the disease. In fact, there was a possibly significant preponderance of immune persons in the areas of greatest concentration (the disease occurred in the same districts in 1933). The distribution of the disease was different from that of measles. The possibility of a mosquito vector was considered.

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DISCUSSION (*Abstract*)

Dr. J. Earl Smith, St. Louis, Mo.—The fact that a disease has occurred and spread in all parts of the world makes it certain that climate or other environmental factors which are peculiar to any less limited area cannot be essential factors in its transmission.

Conversely, the fact that a disease occurs only within well defined geographic limits may constitute presumptive evidence that some environmental condition peculiar to these areas is necessary to its propagation.

The distribution of a disease in various subdivisions within the area of occurrence may also be significant of the general conditions requisite for transmission. A fairly uniform distribution not consistently related to such conditions as climate, density of population, and habits of life, indicates that the conditions of transmission are simple, as for example, in the case of measles and influenza.

An irregular distribution, characteristically high in certain localities and low in others, suggests that the environment associated with the higher prevalence may provide the special conditions necessary.

Dr. Casey has concerned himself with this latter problem as related to the epidemiology of St. Louis encephalitis. The implication of his thesis that an insect vector, more particularly the mosquito, may be involved in the transmission of St. Louis encephalitis, does not, it seems to me, fit in with the entire known epidemiologic story of St. Louis encephalitis. For instance, in both the 1933 and 1937 outbreaks, our statistical data showed a striking increase in the incidence of the disease with age and an even more notable increase in the fatality with age.

Recent studies on equine encephalomyelitis in Massachusetts, where certain species of mosquito were incriminated, as reported by Feemster and Getting, of the Massachusetts Department of Public Health, reveal that infants and children under ten years of age constituted 70 per cent of the cases. Contrast this with our St. Louis figures, where in both 1933 and 1937 over 90 per cent of the cases occurred in persons over ten years of age.

In explaining the higher incidence in children, Getting, in a separate report observes that during the summer infants are often left to sleep outdoors, sometimes without protective netting, and are unable to defend themselves against mosquitoes; moreover, children under ten who play outdoors the greater part of the day, are less efficient than older groups in protecting themselves since they do not react to a mosquito until it has bitten them. Thus, infants and children who sleep or play outdoors are more likely to be bitten than older persons who, taught by experience, react to the buzzing or alighting of a mosquito.

Getting also comments that man or animal outdoors is exposed ten times as much to the chance of infection as he is in a building.

Based on this line of reasoning and presuming the possibility of the mosquito as a vector, it is quite difficult to explain our much higher incidence among the less mobile, because of their age, and hence the more sheltered members of our population.

The figures are 62.6 per cent of cases over forty years of age in 1937; 62.9 per cent of cases over forty years of age in 1933. A mosquito vector in St. Louis encephalitis does not, it seems to me, fit in with this age pattern.

As the studies in both the Eastern and Western types of equine-enchepalomyelitis have definitely established certain species of mosquitoes as vectors in the transmission of these diseases, it is only natural to attempt to establish an insect vector, most likely the

mosquito, in the role of the major factor in the transmission of St. Louis encephalitis.

Although the mosquito experiments during the 1933 outbreak were all negative under a wide variety of experimental conditions, we cannot say that the possibility of transmission in nature is finally disproved.

As to the effect of climate on these various disease outbreaks, I should like to quote from the late Wade Hampton Frost:

"The seasonal fluctuations in rates of prevalence which are characteristic in many diseases can usually be explained, if at all, only in the light of fairly definite knowledge of other associated epidemiological features; hence, considered by themselves, these fluctuations must be interpreted most cautiously. The seasonal distribution may, however, support or negative a particular hypothesis as to the means of spread of a disease of uncertain epidemiology. For instance, the characteristic summer prevalence of poliomyelitis, together with certain other features of its occurrence, suggests that the infection may be transmitted by insects; but the fact that even occasional epidemics occur in severe winter weather excludes a large group of insects from consideration as obligate parasites."

I do not personally know of any "proved winter outbreaks" of St. Louis encephalitis but the analogy with poliomyelitis in other known respects is so close as to suggest a similar epidemiology for St. Louis encephalitis.

The available evidence on the epidemiology of St. Louis encephalitis as summarized in Public Health Bulletin 214, "Reports on the St. Louis Outbreak of Encephalitis," is as follows:

"In view of the trend of the insect experiments, the diffuse fashion in which poliomyelitis, except in the most intense epidemics, spreads through a community without apparent contact between cases, and in view of the radial spread of this epidemic of encephalitis by communities but not by individual cases, it appears likely that human contact, chiefly through unrecognized carriers, is the method of infection here, but that susceptibility, in which age is an important factor, determines who will contract the disease in any infected community."

No significant new findings have been established to add to this summary made in 1933, so far as I know.

The demonstration of St. Louis encephalitis virus in certain species of mosquitoes would not necessarily mean that mosquitoes play the predominant role in its transmission. Other associated factors would of necessity be necessary to clinch its whole epidemiology.

The tremendous technical advances made in virus work during recent years will undoubtedly give us an answer to the possibility of an insect vector in the transmission of St. Louis encephalitis, in the near future.

Dr. Margaret G. Smith, St. Louis, Mo.—An analysis of the distribution of St. Louis encephalitis such as Dr. Casey has given us offers a possible lead for future investigation, and certainly a stimulus for it.

We have considered, I believe, two principal modes of transmission of the disease: first, transmission by some insect vector; and, second, transmission by direct contact, possibly by admission of the virus through the nose and throat.

The recent observation of Hammond, in Meyer's laboratory, that the virus of St. Louis encephalitis could be isolated by means of mouse inoculation in one of approximately a hundred pooled lots of mosquitoes, adds some weight to the idea that the mosquito may transmit the disease. He has also demonstrated neutralizing antibodies for the virus of St. Louis encephalitis in the blood of a number of species of animals and birds. This again would suggest that these animals and birds may act as a reservoir in nature from which some insect vector may transfer the disease to man.

Important information on the subject might be gained by a detailed anatomical study of the brains of human cases of encephalitis; that is, a study of the distribution of lesions in the brain. Bodian and Howe have used this method very successfully in studying poliomyelitis. Their work with human brains and the brains of experimental animals has shown very clearly, that one can pick out the tracts in the central nervous system that have been involved, and apparently determine to a considerable extent what pathway the virus has used to enter the central nervous system.

In the study of the brains of human cases of poliomyelitis, no evidence has been shown that the virus enters the brain by way of the olfactory tract, but rather evidence that it entered by way of the pharynx or possibly the gastro-intestinal tract. Such a study has not been made of brains in the case of St. Louis encephalitis and, if made, might give us very definite information as to whether the virus entered by way of the olfactory tract.

Studies with the experimental disease in mice make it clear that this method can be used to study St. Louis encephalitis as well as poliomyelitis, and it seems to me that it is a method of study that the pathologist should make use of.

Dr. Goronwy Owen Broun, St. Louis, Mo.—The status of mosquito transmission of this disease at the present time is as follows: The distribution of the cases of St. Louis encephalitis as Dr. Casey has pointed out, is such as you would expect from an insect-borne disease where the insect lives along streams. That would be in favor of the mosquito as vector.

It would be necessary, of course, to show that mosquitoes biting an infected animal could acquire the virus. That has been done in the case of St. Louis encephalitis, by Webster, in the case of the Anopheles mosquito, and in our own laboratory we have shown that the Culex pipiens, which is the most common mosquito in this neighborhood, is able to harbor the virus after biting an infected animal.

Thirdly, it should be possible to find infected mosquitoes in an epidemic neighborhood. That has been done, as Dr. Smith has pointed out, with mosquitoes captured in the state of Washington during an epidemic, a variety of Culex, Culex tarsalis, being found spontaneously infected with the virus.

Locally here we have captured mosquitoes in the last several years, but I would like to point out that

this was in the period between the epidemic outbreaks. So far in this area we have not found any infected mosquitoes.

There is a final point still needed to prove the possibility of mosquito transmission of St. Louis encephalitis. So far it has not been demonstrated that once a mosquito acquires the virus and bites a second animal, that the animal will become infected with encephalitis. Webster attempted to do this with infected Anopheles mosquitoes, and we have done similar experiments with infected Culex. The animals bitten by the mosquitoes did not become ill with encephalitis.

It is, of course, known that the virus, when injected under the skin of mice does not cause encephalitis. If injected into a nerve or introduced into the nasal passage so that it comes in contact with the olfactory nerve, then the animal becomes infected. The proof of transmission by the bite of infected mosquitoes is therefore still missing in evidence needed to prove mosquito transmission.

Recent work has shown that in the case of lymphocytic meningitis, the temperature to which the mosquito is subjected prior to biting an animal is important, and this may be a factor in the transmission of St. Louis encephalitis.

Still another method of transmission deserves some mention, namely, entry of the virus through the gastro-intestinal tract. That the intestinal tract is a possible portal of entry for the infection is shown by the observations of Harford, Sulkin and Bronfenbrenner. These investigators have shown that an adult mouse after devouring infected young, may become infected with encephalitis.

Dr. Mezera working in our laboratory introduced the virus directly into the gastro-intestinal tract by injection after laparotomy. In only one instance among fifty did the virus so introduced into the intestine result in production of encephalitis.

Dr. Maurice Couret, New Orleans, La.—The maps plotted by Dr. Casey bring back to my mind maps that were plotted during the 1905 and 1907 outbreaks of yellow fever in New Orleans. I am very much impressed with the similarity between the focal distribution of encephalitis and yellow fever. It suggests the possibility of an insect-borne infection, since the foci were all near a stream or overflow lands.

Yellow fever, as you remember, is transmitted by a mosquito that breeds in cisterns or any receptacle containing water that may be left in the back lots about residences. The species has an all day flight so that young and old and middle age individuals who are about may be infected. Dr. Casey tells us that encephalitis apparently is more or less limited to adults. This is what happens, for the most part, in malaria because the Anopheles which is strictly a night flyer does not contact the children who are in bed behind screens at this time. Therefore, in considering a mosquito as a transmittor of encephalitis we should look for a species whose flight is after sunset and not during the hours that the children are about.

Besides the Anopheles, there are several varieties of Culex that fly mostly or entirely after night fall. I know of some varieties whose flights are limited to one or two hours after sunset and about the same length of time before sunrise. I should look first among these.

Then there are other insects besides the mosquito that should be thought of: among others, some of the gnats and some varieties of sand flies that breed near pools and swamps and fly after dark. These should not be forgotten in looking for a carrier among the insects.

In transmission of disease by insects there are two factors that should be considered: the period during the course of the disease at which the insect can be infected, and the length of time required for the development of the virus in the insect. If the virus is transmitted by mechanical means, these factors of course need not be considered.

There is much work to be done when we attempt to connect an intermediary host with the transmission of any disease, but from Dr. Casey's maps and his other observations on this type of encephalitis I certainly believe that it would be worth while to give much thought and work to this method of transmission.

Dr. Casey (closing).—We neglected to mention that with regard to the distribution which we found along these small streams in the weed and the tin can areas, during both epidemics it was a hot, dry year, when evaporation was rapid, and the sewerage concentration was great. Such a distribution with regard to the three general types of mosquito would represent Anopheles to some extent, but almost entirely Culex, and, as Dr. Couret says, not the Aedes.

Distribution in this irregular manner (such as Dr. Smith has brought out) indicates that it is something odd, and not human transmission as a major factor in initiating the epidemic.

Now, of course, we cannot say from these studies that human contact as an important factor does not take place once the epidemic is started. All we can say is that something existed along these streams in these weed and tin can areas, which started the epidemic in those same places in two different epidemics, and which remained there as the principal forms throughout both epidemics.

It is the distribution for Culex mosquitoes, and, so far as we know, not of ticks. I am not sure about the gnats, Dr. Couret. I neglected to look that up. However, with regard to poliomyelitis, which has been mentioned, we have had an opportunity to study that this summer, and the gnats have been mentioned very commonly in our histories of cases of poliomyelitis.

The contact histories in poliomyelitis, however, run very high, and the only insect which we have been able to involve is the fly, in poliomyelitis, but contact has run in Walker County, Alabama (from one case to another), as high as 60 to 80 per cent.

REGIONAL ILEITIS*

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According to Goldstein,[18] Combe and Saunders were first to describe the disease which is now popularly known as regional ileitis. In 1905, Senn[29] described it for the first time in this country; but it was not until Crohn, Ginsburg and Oppenheimer[8] described fourteen cases and applied the above name that it became firmly established in our literature. Crohn and his associates,[8] in their first publication, thought the disease limited to the terminal ileum, but subsequently[9] subscribed to the views first expressed by Colp[5] and also by others,[10 12 25 30] that any part of the digestive tract may become involved. Probably a term such as "nonspecific granulomatous enteritis" would be more accurate, but awkwardness of expression and the necessity for a localizing word or phrase will probably prevent its universal adoption.

Regional ileitis is important clinically because: (a) it is much more common than is generally realized, as is attested by the reports of various writers[3 20 24 28 31] on aspects of large numbers of cases and the fact that Crohn and his associates[8 9 10] have two hundred cases; and (b) because in a fairly large proportion of the cases reported by Mayo and Judd,[24] patients had been operated upon previously and the true diagnosis either was missed or, in the realization that a "disease condition" existed, the abdomen was closed without corrective measures having been taken.

Etiology.—The disease under consideration is a nonspecific inflammatory granuloma of the intestine. Felsen[15] believed it due to dysentery bacillus infection, but other workers have been unable to substantiate his opinion. Crohn and Rosenak[9] had no positive cultures and only one positive agglutination against dysentery in sixty cases, and out of two hundred cases, Crohn and Yunich[10] were able to recover dysentery organisms from only two. Furthermore, the latter authors think it significant that no known cases of regional ileitis have developed in a group of 250 nurses who were known to be ill with bacillary dysentery during an endemic in 1938.

Klemperer,[23] who investigated Crohn's earliest cases,[8] and Pumphrey[28] in an exhaustive study of material at the Mayo Clinic were unable to isolate any specific causative organism. However, and although its nature has escaped detection, there appears to be a possibility of specific bacterial etiology in the light of Crohn and Yunich's record of two families in which, respectively, two and three siblings developed regional ileitis. No relationship with intestinal tuberculosis has been proved.

Koster, Kasman and Sheinfeld[22] were unable to obtain positive Frei tests in any of seven cases, and so concluded there is no relationship to lymphogranuloma inguinale.

Many contributory causes, for example, chronic appendical disease,[19] chronic recurring ileocecal intussusception,[2] trauma, foreign bodies, ulcers and extra-peritoneal infections[25] have been described, but the present attitude is to consider that

> "the exact etiology and pathogenesis of regional ileitis has not been determined; that it appears to be a nonspecific inflammatory process, initiated perhaps by a variety of factors and aggravated by various constituents, bacterial and otherwise, of the intestinal content."[13]

Pathologic Considerations. — Three general facts are of importance, namely: (a) except in the early, acute stages, the pathological changes are irreversible, (b) the disease tends to extend orally and (c) it is not uncommon to find isolated areas of disease separated by normal bowel (so-called "skip-area" involvement).

The essential process is a progressive proliferative inflammation involving all of the intestinal coats. The mild, acute initial stage in which edema causes obliteration of mucosal folds, separation of muscle fibres and focal hemorrhages may resolve and permit the intestine to return to normal. If, however, progress takes place, mucosal ulcers and abscesses form and fistulae develop; the ulcers are characteristically serpiginous along the mesenteric attachment of the bowel. The fistulae may end blindly in the mesentery or communicate with adjacent organs, such as intestine, bladder and in the female, the vagina. External fistulation usually follows a surgical operation, notably appendectomy, but Penner and Crohn[26] have

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one case of lumbar fistulation due to regional ileitis without preceding operation. These authors estimate that fistula in ano is caused by and a complication of 14 per cent of cases of regional ileitis. They refer to a case reported by Snapper in which a perinephritic abscess was due to regional ileitis.

Coincident with injury and destruction, there is proliferation and repair. The mucosal ulcers may become covered by regenerated simple columnar epithelium with a resultant smooth surface and loss of mucosal folds. Granulation tissue formed at the ulcer sites is followed by fibrosis which causes thickening of the intestinal wall and, with scar tissue contraction, gives rise to stenosis of the bowel lumen. The stenosis causes obstruction, which varies in degree with the extent of narrowing, and dilatation of bowel lumen proximal to the affected region.

Clinical Considerations.—Symptoms depend upon the stage and degree of involvment. Crohn, et al.[8] proposed four chief clinical stages: (a) symptoms similar to those of acute appendicitis, (b) symptoms of ulcertive enteritis, colicky abdominal pain, diarrhea with mucous and sometimes bloody stools, loss of weight and secondary anemia, (c) obstructive symptoms, usually incomplete and characterized by crampy abdominal pain, borborygmi, distention, nausea and vomiting and constipation, and (d) fistulation. In individual cases the symptoms depend upon the predominating process, that is, whether inflammatory or obstructive, and this consideration doubtless accounts for the marked discrepancy in comparative frequency of symptoms reported in various series (*Table 1*).

The duration of symptoms is usually of years rather than months; Mayo and Judd[24] found extremes of one week and eighteen years, with an average of 2.63 years. The majority of cases are in the second and third decades, but no age group is immune.

Radiologic Considerations.—By properly planned and executed roentgenologic examinations regional ileitis can be diagnosed with virtual certainty and, of great importance, the surgeon may know, in advance of his operative procedure, the extent of involvement. The latter consideration is of real importance when "skip-area" implication is present.

As a rule patients are referred primarily for examination by barium enema because of symptoms suggestive of entero-colitis. It frequently happens that the terminal ileum cannot be made to fill and consequently only indirect evidence of the nature of involvement may be obtained; the more important findings in this regard are (a) spasm of the sphincter of Busi, a circular band of muscle which separates the cecum from the ascending colon[1] and which is manifested by a bud or teat-like contracture of the cecum[21] (*Fig. 1*), and (b) stiffness or irregularity, especially on the medial aspect, of the cecal wall. In the majority of cases gastro-intestinal study by means of ingested barium suspension is necessary; the four, six and nine-hour examinations are especially important.

	Loss of Weight	Diarrhea	Palpable Mass	Fever	Distention: Obstruction	Abdominal Cramps	Anemia	Nausea and Vomiting	Blood in Stools	Fecal Fistula	Previous Appendectomy	Tenderness
Clarke and Dixon[3] 44 Cases	43	30	32	28	28	37c	18	18	7	9	24	
Jellen[20] 50 Cases	30	26	29	19		36	21	14		18	14	
Koster, Kasman and Sheinfeld[22] 17 Cases	3	1	2	16	10	14		13a			3	17
Golden[17] 11 Cases		9										
Mayo and Judd[24] 100 Cases		d	38				e				20b	

(a) 2 cases had nausea without vomiting.
(b) Within year prior to admission.
(c) Includes 12 cases with abdominal pain other than cramps.
(d) Outstanding feature.
(e) Not a feature.

Table 1

Cases of acute regional ileitis are not ordinarily examined by the radiologist because the symptoms are indicative of acute appendical disease. Koster and his associates,[22] however, studied several in the acute phase and concluded that the significant roentgenologic findings are (a) uniformity of intestinal lumen diameter, (b) absence of segmentation and peristalsis and (c) stiffness of involved intestine. These are the findings one would expect in the presence of edema of the intestinal coats; obliteration of mucosal pattern from the same cause would also be anticipated in this stage.

In more advanced stages there is irregularity of intestinal outline with constant filling defects and out-pouchings due to ulcer, abscess and fistula formation. Normal bowel flexibility is lost because of fibrosis, and this, with scar tissue contraction, causes attenuation of the bowel lumen to a thin, streak-like shadow, the so-called "string sign"[4 20] (*Fig. 2*). Proximal to the region of involvement the intestine is distended and delay of emptying time beyond the normal nine hours is evident.

Treatment. — Thorek[32] says that chemotherapy has been tried but the results have been disappointing. X-ray therapy, tried in a few cases[14 27] has not been encouraging. Cutler[11] believed surgery to be of little value except when obstruction or abscess is present, and advocated medical management for the remainder of cases. The majority of writers advocate surgical intervention except in the acute phases, Colp,[6] Crohn,[7] Cutler,[9] Thorek[32] and Zaborowsky,[34] among others believe that when, at operation an acute regional ileitis is found, the abdomen should be closed without performance of an appendectomy because of the danger of subsequent fistula formation. Sneierson and Ryan[31] believe appendectomy permissible in such cases since they had no fistulation in six cases so treated; they claim support for their contention by Woolsey.[33]

Surgical Considerations.—When the disease has become well established, the essential findings at operation are:

(1) Rather sharp demarcation between diseased and grossly healthy bowel (*Fig. 3, a; 4, c*).

(2) Rough, granular appearance of the serosa.

(3) Tubercle-like nodules on the serosa.

(4) Swelling, redness and stiffness of the bowel wall.

(5) Edematous, inflamed mesenteric fat which may tend to encircle the intestine.[30]

(6) Varicosity of blood vessels.

(7) Hyperplasia of neighboring lymphatic glands.

Such changes are irreversible and, when found, surgical intervention in the form of one or two-stage operation is indicated.

By one-stage operation is meant ileocolostomy and resection of diseased bowel at the same procedure. Although this method was successful in both of our cases, the modern trend is toward two-stage operation, by which is meant division of the ileum with ileocolostomy as the initial procedure, and later, if necessary, resection of the diseased intestine. Because of the marked tendency of regional ileitis to spread orally, it is essential that the ileum be divided and that the site of section be well proximal to the region of involvement; if these two conditions be not fulfilled, recurrence is practically certain.

Fig. 1, Case 1

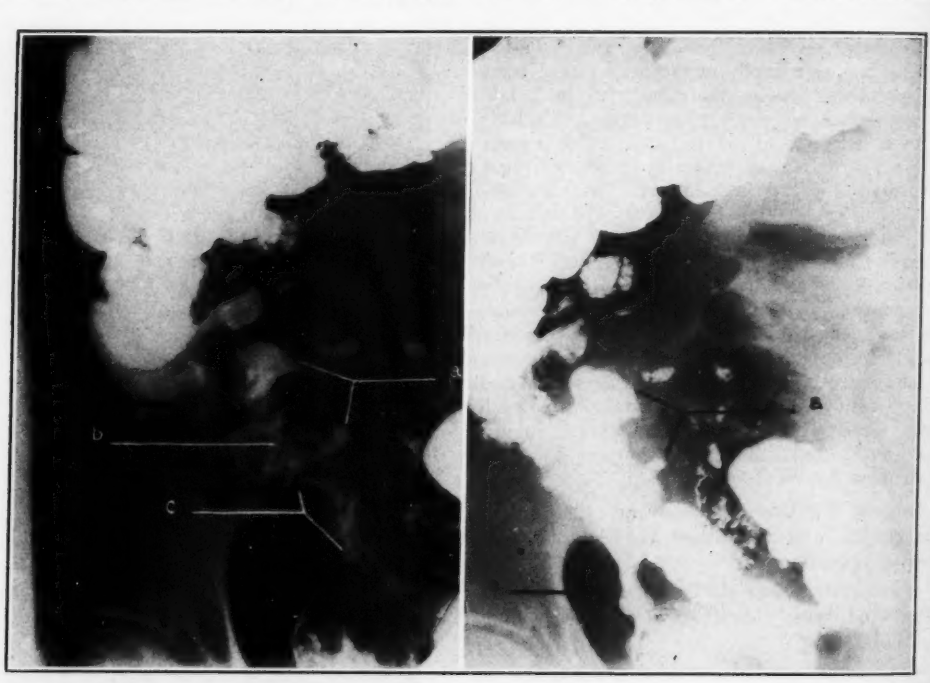
Appearance of colon upon barium enema examination, showing well marked spasm of the cecum. The contracture was persistent in post-evacuation and double contrast studies.

Colp[6] and Crohn[7] have found that in the majority of cases only the first part of the two-stage operation need be done; they have repeatedly found, when going back to resect diseased ileum, well healed, fibrosed intestine. Their present procedure is to reserve the second stage for those patients in whom (a) fistulation takes place, (b) the temperature remains elevated, (c) there is continuous loss of weight, and/or (d) the hemoglobin level falls. It is worthy of note that eleven different surgeons operated upon the hundred cases reported by Mayo and Judd[24] and two-thirds of the operations were of the two-stage type.

Prognosis.—Koster, Kasman and Sheinfeld[22] concluded that extensive involvement, especially if the jejunum be implicated, and recurrence are the most unfavorable factors. They found a general mortality of 14 per cent in 65 resected cases; in 15 cases, where a simple side-track operation was performed, 13 cures resulted, one patient died and one had a persistent fistula. In eight cases with early form of disease, cure resulted without recourse to surgery, but six other cases, under similar management, required operation. Mayo and Judd's mortality rate for one-stage operations was 21.9 per cent of 32 cases; 64 two-stage operations were performed with two hospital deaths. Of the 62 patients, who had had two-stage operations, discharged from hospital they were able to follow 57 and found that only three had died. Colp was reported by Crohn[7] to have performed a series of 43 two-stage operations without any deaths. Two cases were seen by us in St. Vincent's Hospital in the past year.

CASE REPORTS

Case 1.—D. W., a colored woman, aged 21, was admitted to the medical service of Drs. W. B. Martin and R. Bryan Grinnan on December 5, 1940, with a chief complaint of diarrhea which had been present for 3 weeks and which had been characterized by seven to eight stools, the nature of which she had not noted, during each 24 hours. In September, 1939, she had been symptomatically treated, evidently with



A B

Fig. 2, Case 1

Spot films of terminal ileum six hours after ingestion of barium sulphate suspension. A with, and B without compression. Marked irregularity of lumen outline is seen at (a). At (b) there is shown complete loss of normal mucosal pattern with irregular distribution of opaque medium over the altered surface. At (c) is shown narrowing of the lumen ("string sign"). This was present and persistent throughout fluoroscopic examination and in serial films.

success, in the Out-Patient Department, for nausea, vomiting, abdominal pain and constipation. She stated in her admission history (December, 1940) that she had not had any fresh food for a long time until two or three days prior to hospitalization, but that she felt a little improved after drinking milk.

She was extremely thin and poorly nourished. The only positive physical findings were a few moist rales in the right mid-anterior lung field and some pigmentation, thought to be due to burns but suggestive of avitaminosis, about the inner aspects of both knees. The abdomen was negative for abnormal masses or tenderness; the uterus and adnexa on admission were normal. Roentgen examination of the chest (A. K. W.) showed healthy lung fields, with no evidence of recent tuberculosis.

Laboratory investigations indicated a marked degree of secondary anemia (red cells 2,670,000, hemoglobin 52 per cent, white cells 5,650) and this persisted throughout her stay in the hospital despite repeated transfusions and injections of liver and iron. The Wassermann and Kline had been negative on her outpatient adminssion in 1939 and were still negative at the time of her hospitalization. Gastric analysis showed hypoacidity, with a total acidity of 34° following histamine. Urinalysis revealed albumin, pus and renal cells; urine culture showed hemolytic streptococci. There was occult blood in the stools on admission, but no ova or parasites could be found; stool culture disclosed B. coli, Proteus vulgaris and Aerobacter aerogenes.

Proctoscopy (R.B.G.) demonstrated a few dilated anal veins and a few areas exuding pus and mucus about six inches above the muco-cutaneous boundary, but no evidence of ulceration.

Diagnostic possibilities of avitaminosis (pellagra), dysentery, malnutrition and pyelonephritis were considered. The first was abandoned when, after seventeen days of vitamin therapy, she failed to show any improvement. Sulfathiazole, given in an attempt to clear up the urinary infection, had to be stopped after administration for one day because of sharp rise of temperature attributed to it.

Diarrhea was not a feature of her illness during hospitalization; on the contrary, she required enemas on many occasions for the relief of constipation.

On December 17, she complained for the first time during this illness of right lower quadrant abdominal pain and a tender mass was palpable in that region. Barium enema examination (A. K. W.) failed to show any filling defect or obstruction of the colon, but revealed a teat-like contraction of the cecum (*Fig. 1*). The terminal ileum could not be made to fill. Further investigation had to be postponed until, by rest and repeated blood transfusions, she had gained sufficient strength. In the interval she complained almost constantly of right lower quadrant abdominal pain, but the mass was not always palpable.

On December 30, gastro-intestinal roentgenologic examination (A. K. W.) revealed abnormality of the terminal ileum characterized by irregularity of outline due to filling defects and out-pouchings, narrowing of the barium stream ("string sign"), absence of peristalsis, rigidity and tenderness on palpation. The area of this abnormality corresponded to the palpable abdominal mass. A diagnosis of regional ileitis was submitted (*Fig. 2*).

At operation, January 7, 1941 (H. G. A.), a granulomatous condition was found involving the terminal

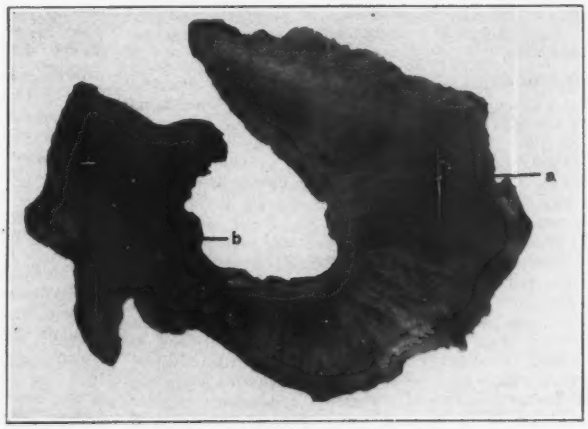


Fig. 3, Case 1

External surface of gross specimen. The zone of demarcation between grossly diseased and apparently healthy bowel is at (a). A large lymph node is seen at (b).

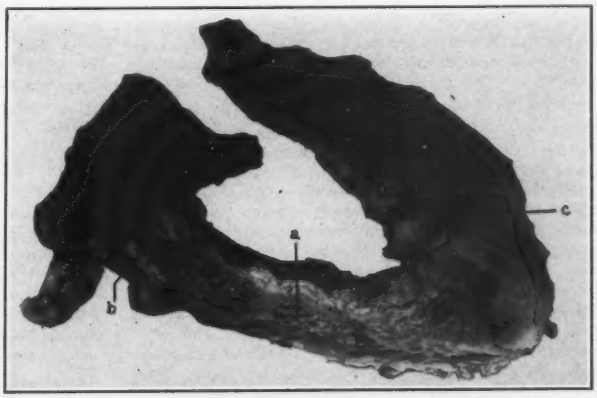


Fig. 4, Case 1

Mucosal surface of gross specimen showing, at (a) ulceration along mesenteric border, (b) narrowing of ileocecal sphincter by thickened bowel wall. The demarcation between grossly healthy and diseased bowel is seen at (c).

nine inches of ileum and the cecum. The diseased bowel was thickened, stiff and studded with small tubercle-like nodules; its surface was rough and reddened. The ascending colon appeared to be healthy. The appendix was involved in the mass. The uterus and tubes were infantile, apparently free of disease; the liver was apparently normal. About sixteen inches of ileum with the cecum and proximal half of the ascending colon were resected. The proximal end of the sectioned ileum was implanted, side-to-side in the colon by means of a Murphy button.

Postoperatively she ran a persistent remittent type of fever which ranged from 99° to 102°, for which no satisfactory cause could be discovered. The Murphy button was passed on January 19. On February 5, she was afebrile and was discharged from the hospital. Since then she has been seen on several occasions and has had no recurrence of intestinal disorder; she had gained in weight and apparently was in good health.

Pathologic Examination.—Dr. A. F. Strauss reported upon gross examination (*Figs. 3* and *4*): "The specimen consists of a piece of ileum and colon, 48 cm. in length, 9.5 cm. of which is large intestine. The proximal 18 cm. of ileum and distal 5.5 cm. of colon show no remarkable changes. Beginning with a rather straight boundary at which the mucosa is reddened but not overhanging or sloping, the inner surface of the ileum is grayish red and granular in appearance and is covered by whitish-gray, irregularly shaped membranes and much mucus. In the upper (proximal) portion there is an island of elevated dark red mucosa 1.0x2.5 cm. in dimensions. Villi are entirely absent from all involved portions. The wall thickness is increased to about one centimenter and the ileocecal valve is narrowed to about one centimeter in diameter. The mucosal surface of the cecum and colon is similar to that of the ileum except that there are a few fresh hemorrhages in the colon mucosa. The serosa, commencing about two centimeters above the described mucosal changes, appears whitish, with reddish adhesions, and is thickened; just at the boundary of the ileal ulceration it has flat whitish, occasionally brownish nodules, none of which are in excess of two millimeters in diameter. There are three lymph nodes varying in diameter up to 1.0 cm. at the ileocecal angle; their cut surface has a grayish-red translucent appearance. The appendical mucosa is not altered and is sharply defined from that of the cecum."

Microscopic Findings.—A section from the proximal boundary of the ulceration shows increased round and plasma cell infiltration in the mucosa. The submucosa is slightly thickened and similarly infiltrated, chiefly perivascularly. A smaller artery shows a coat of round cells; its wall is partly necrotic, infiltrated with neutrophils and the lumen contains a fibrinous thrombus. The mucosal margin is slightly undermined at the beginning of the ulcerated area; the surface of this area consists of a slightly vascular granulation tissue with abundant round and plasma cells and neutrophils in the superficial strata. Inflammation extends along the vessels into the muscular layer. The subserosa is thickened and contains some lymphocytes. In other sections of the ileum the inflammation is more intense, the subserosa is markedly thickened and edematous with large lymph follicles, fibroblasts and capillary proliferation. In the cecum the serosa almost resembles the granulation tissue of the mucosa. The lymph nodes show sinusoids filled with fluid, swollen mobilized reticulum cells, round cells and occasional eosinophils. The lymphatic tissue near the hilum is of distinctly plasmacellular composition.

The pathologic diagnosis was regional enteritis.

Case 2.—Mrs. E. B., aged 44, white, was admitted to St. Vincent's Hospital August 24, 1941, as a private patient of one of us (H. G. A.). Her chief complaint was of profuse irritating vaginal discharge and an eczematous condition about the vulva of approximately four months' duration. There had been no menstrual irregularity. She had had occasional slight lower abdominal pain and had lost some weight. Except for irregular slight flatulence, there had been no symptoms of digestive disturbance. There was no history of diarrhea or dysuria and prior to the onset of her present illness she had been in good health.

Blood pressure was 104/62. The only contributory physical findings were with reference to the abdominal and vaginal examinations which disclosed a mass about the size of an orange in the right lower quadrant of the abdomen; it was of elastic consistency. There was a profuse mucopurulent vaginal discharge and about the vulva there was an eczematous dermatitis which extended onto the perineum. Urinalysis showed a slight trace of albumin, occasional pus and a few epithelial cells. The hemoglobin was 64 per cent, red blood cells 3,390,000; white cells 13,100; polymorphonuclears 71 per cent; lymphocytes 24 per cent; mononuclears 3 per cent; eosinophils 2 per cent; Wassermann and Kline were negative.

An experienced consultant confirmed the opinion that the abdominal mass was probably an enlarged cystic ovary and that the purulent discharge with eczema were of gynecologic origin. She was accordingly posted for operation without further investigation.

Upon abdominal operation, August 25, 1941 (H. G. A.), a mass of granulation tissue was found in the region of the ileum and cecum. This mass involved the lower ten inches of the ileum and was causing partial intestinal obstruction due to inflammatory adhesions to the transverse colon. The loop of small bowel was also included in this inflammatory mass. The growth itself involved about six inches of the ileum, but the ileocecal valve was apparently free. The uterus and tubes were normal; there was much pelvic relaxation. No masses were felt in the liver.

The obstruction was freed. The terminal ileum was resected and the appendix was removed. An end-to-side ileocecostomy, using a Murphy button, was done.

Her postoperative course was entirely uneventful. The Murphy button was removed from the rectum on September 12, and she was discharged from hospital the following day. Since then she has been examined several times and has always been entirely free of symptoms and complaints. The vulvar eczema and vaginal discharge disappeared almost immediately following operation.

Pathologic Report (Dr. A. F. Strauss).—Grossly, the specimen consists of 30 cm. of ileum convoluted by dense thick adhesions which bind one portion, wall to-wall, tightly together. The mucosa of the proximal 15 cm. is smooth; that of the remainder is much

roughened by deep grayish pits and projecting reddish nodules. Associated with this is increased thickness of wall from about 0.7 cm. to an average of about 1.2 cm. Where the wall is thickened the diameter of the lumen is narrowed by at least one-half that of the unthickened portion. Microscopically, the mucosa of the intestine is markedly edematous and infiltrated with round cells, plasma cells, eosinophils and some neutrophils. The infiltration extends into the submucosa and between the septa of the muscular layer. There is likewise proliferation of capillaries and inflammatory infiltration into the subserosa. In some regions the mucosa shows superficial necrosis with many neutrophils. There are a number of giant cells within the granulation tissue, some of which possibly are derived from the layers of the muscularis mucosa. In some sections the arrangement of lymphocytes in the subserosa is distinctly follicular, occasionally with a germinal centre. Another ulcer shows a markedly eosinophilic infiltration at its base, and the underlying muscular layer shows a diffuse infiltration with round cells, eosinophils and some histiocytes.

The diagnosis is terminal ileitis.

SUMMARY

Two cases of regional ileitis have been presented. The first was characterized by slow onset and manifestation of indicative symptoms and signs. Ultimately it showed characteristic findings, especially upon roentgenologic examination. A one-stage operation has apparently controlled the disease for over a year. The second case was notable in that the symptoms and signs were of gynecologic disease which disappeared promptly following relief of the causative regional ileitis; it emphasizes the necessity for being prepared to deal with this disease whenever the abdomen is opened.

CONCLUSIONS

(1) Regional ileitis is an inflammatory granuloma of unknown etiology. Experience would indicate that it is being successfully diagnosed and treated with increasing frequency.

(2) The symptoms and signs of especial importance are (a) diarrhea, (b) a tender, palpable abdominal mass, (c) symptoms of incomplete obstruction following preceding abdominal pain, (d) secondary anemia and (e) loss of weight with anorexia.

(3) The roentgenologic signs are best elicited following ingestion of barium sulphate suspension.

(4) In early acute cases surgical intervention, especially appendectomy, is contraindicated. In advanced disease section of the ileum well proximal to the upper limit of involvement is essential; the proximal end of the sectioned ileum should be anastomosed to the transverse colon.[6 7]

(5) If, subsequent to section and anastomosis of the ileum, the patient fails to make satisfactory progress, the diseased bowel may be resected at a second operation.

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CORNEAL VASCULARIZATION IN ARIBOFLAVINOSIS*

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Out of the large field of avitaminosis has come the clinical appreciation of the still larger field of subclinical vitamin deficiencies. Constantly attempts are being made to discover more sensitive methods of detection.

The syndrome of riboflavin deficiency was first induced experimentally by Sebrell and Butler. [1,2] They described a cheilosis or maceration at the angles of the mouth, denudation of the buccal mucosa, a grey color of the lips, and a seborrheic accumulation at the nasolabial folds. About this time Bessey and Wolbach[3] reported vessels in the cornea in ariboflavinotic rats. Using a slit lamp, Sydenstricker[4,5] studied the eyes of patients on a riboflavin deficient diet and found congestion of the sclera and superficial vascularization of the cornea and opacities as specific lesions of ariboflavinosis.

It has heretofore been impossible to photograph the finer ramifications of corneal vascularization in the human eye and picture them in relation to the normal due to technical difficulties such as proper lighting and immobilization of the eye over the period of exposure. We succeeded in obtaining the complete picture of corneal vascularization by removing the eye and orbital contents postmortem, injecting the ophthalmic artery with india ink and then mounting the anterior portion of the eye on a slide in glycerin. *Figs 1* and *2* show the normal and abnormal (ariboflavinotic, slit lamp diagnosis) sclerocorneal regions of the human eye. No human eyes with corneal opacities were available for injection and photography. We were able, however, to obtain heavy vascularization of the corneal opacities in avitaminotic rats. This vascularization is shown in *Fig. 3.*

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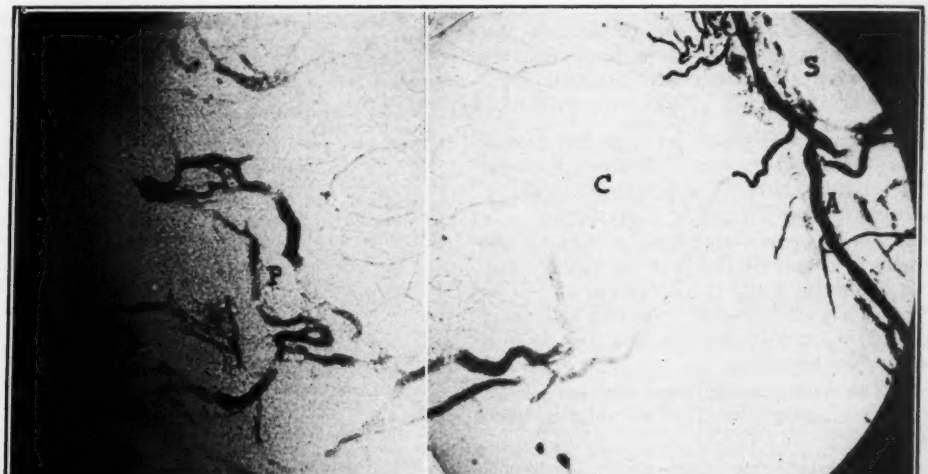

Fig. 3

Vascularization of a corneal opacity in the white rat. India ink injection shows the circular artery of the limbus and the normal extent of its branches. Beyond these are seen, filled with blood, the capillary arcades characteristic of riboflavin deficiency and arising from the arcades, the large dilated engorged capillaries of the corneal opacity. S, sclera. C, cornea. P, plexus of dilated capillaries in corneal opacity. A, circular artery of limbus (photomicrograph).

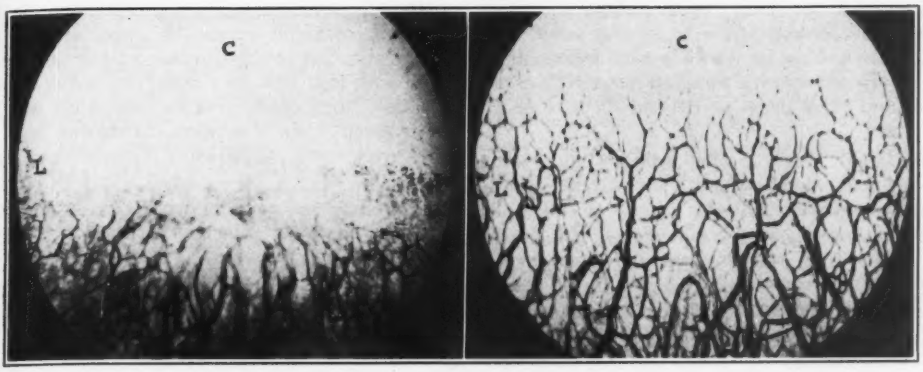

Fig. 1 Fig. 2

Comparison of vascularization of sclerocorneal region in normal (Fig. 1) and ariboflavinotic human eyes (Fig. 2). C, cornea. L, limbus. Note capillary arcades extending beyond the limbus in Fig. 2 (photomicrograph).

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THE TREATMENT OF GRANULOMA INGUINALE*

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Many therapeutic procedures, chemical and physical, have been used in the treatment of granuloma inguinale since it was first reported a clinical entity by Conyers and Daniels,[1] and the etiologic agent demonstrated by Donovan.[2] The first form of therapy to be advised in the treatment of this condition was excision (Conyers and Daniels). Not until 1913 was a satisfactory chemotherapeutic agent, antimony and potassium tartrate (tartar emetic), used by Aragao and Vianna.[3] On the basis of this report, tartar emetic was further investigated by Pardo,[4] Low and Newham,[5] Randall, Small and Belk,[6] Johns and Gage,[7] Weinberg,[8] Hazen and his associates,[9] Cole,[10] and by Manson-Bahr.[11] All of these agreed with Aragao and Vianna that tartar emetic had curative value in the treatment of granuloma inguinale. Of these investigators Randall, Small and Belk claimed that the results with tartar emetic were as striking as the effect of arsphenamine on the lesions of syphilis; and Weinberg said that healing could be observed in 48 hours. On the other hand, Cole reported that relapses were frequent, and Fraser,[12] reporting on 16 cases, had 62.5 per cent failures. He believed that the prognosis of granuloma inguinale was poor and that the results with tartar emetic were disappointing.

Williamson and his co-workers[13] reported in 1933 on a new antimony compound, sodium antimony-III biscatechol disulphonate of sodium, known commercially as fuadin, with which they treated 14 cases, reporting cures in all. They found this compound to be more quickly effective and to cause less untoward reactions than tartar emetic. Rajam,[14] using the same drug, treated 25 cases with satisfactory results. Robertson and Sharp[15] also reported satisfactory results with fuadin and claimed that it healed cases in which tartar emetic failed.

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Randall,[16] in 1923, used sodium antimony thioglycollate and triamide of antimony thioglycollate and reported satisfactory and rapid results. Hazen and his associates and Robinson[17] also used these drugs and found them to be effective.

Ross,[18] in 1939, reported rapid healing of granuloma inguinale lesions with the internal administration of sulfapyridine.

Some investigators, among them Macleod,[19] Aragao,[20] Cole, Manson-Bahr and Greenwood,[21] not wholly satisfied with the results of chemotherapy, advocated a return to the original method of excision of lesions first suggested by Conyers and Daniels. Fraser, however, thought that excision was unsuccessful.

Roentgen therapy has also been used successfully by Macleod and by Manson-Bahr, but Fraser and Aragao state that it is of questionable value, while Rajam, Randall and his group and Cole believe it to be of no value at all. Greenwood used diathermy fulguration successfully in the treatment of 22 cases.

MATERIAL FOR STUDY

This report concerns the results of the treatment of 62 cases of granuloma inguinale treated in the Department of Dermatology of the University of Maryland, over a sufficient length of time to judge the value of the type of treatment used. All patients in this series were negroes. Of these, 23 were males and 39 were females. There were 15 patients between 15 and 20 years of age; 43 between 20 and 40; and 4, over 50.

The duration of the disease was less than six months in 25 of these patients; between 6 months and 1 year in 8 cases; between 1 and 2 years in 12 cases; and from 2 to 17 years in 17 cases.

If the lesion measured 5 cm. or less it was termed "localized;" such lesions responded more readily than larger lesions to tartar emetic or excision. Nineteen patients in this series had localized lesions and 41 had extensive lesions. In some of the cases with more extensive lesions there was involvement of the rectal or urethral mucosa.

METHODS OF TREATMENT

Antimony and potassium tartrate (tartar emetic) was employed in the treatment of 54 cases; in 28 of these it was the only method of treatment used. In our experience it was found that the drug, to be effective, should be freshly dissolved in sterile distilled water. Stock solutions of tartar emetic in ampoules were of little value. A freshly prepared 1 per cent solution was used and treatment was given intravenously in ascending doses beginning with 3 c. c. given 3 times a week, increasing 1 c. c. each week until the patient's tolerance had been reached.

Antimony sodium thioglycollate was given to 2 cases, both of which had been previously treated with tartar emetic; fuadin* was used in 5 cases, 4 of which had previously received other types of treatment; anthiomaline† (lithium antimony thiomalate) was used in 13 cases, 9 of which had previously received other types of treatment. These drugs are available in stock solutions in ampoules. Fuadin and anthiomaline are given intramuscularly, and antimony sodium thioglycollate intravenously.

Three patients were treated by desiccation of the lesions, 2 of whom had received previous treatment of tartar emetic. Sixteen patients were treated by excision of the lesions, and of these, 14 had been treated by other means (1 of whom had been previously treated by desiccation).

Roentgen ray treatment was employed in three cases, all of whom had received other types of treatment. These patients received 1 skin unit (erythema dose) daily. Silver nitrate stick was used in 2 cases. Five per cent sulfathiazole ointment was used in 2 cases, and 1 case received sulfapyridine by mouth.

This paper is not primarily concerned with reactions produced by the antimony compounds, but it was noted that those drugs given intramuscularly caused less reactions than tartar emetic given intravenously. The only reactions experienced were nausea and vomiting and occasionally rheumatoid pains.

RESULTS

In 54 patients (*Table 1*) treatment was begun with tartar emetic, 19 of whom were cured. The number of doses necessary to bring about a cure varied from 6 to 50 treatments; the amount of drug necessary to cause healing varied from 27 to 415 c. c. Treatment was continued, however, for from 1 to 3 months after the lesions healed. Six patients showed partial involution,

*Thanks are due to the Winthrop Chemical Company for the necessary supply of fuadin.

†Thanks are due to Merck & Company, Incorporated, for the necessary supply of anthiomaline.

TARTAR EMETIC	
Number of cases treated	54
Smallest number of doses to cause healing	6
Largest number of doses to cause healing	50
Smallest number of c. c. to cause healing	27
Largest number of c. c. to cause healing	415
Number of cases to heal with tartar emetic as only drug given	19
Transferred to other procedures because of resistance to tartar emetic	26
Partial healing with tartar emetic, but lost before completion of treatment	6
Lost before any improvement noted	3

Table 1

but lapsed and were lost from observation. Twenty-nine patients were resistant to tartar emetic. Of these, 3 lapsed and were lost from observation, and 26 were given other types of treatment.

In the course of this experience with granuloma inguinale, it has been noted that the patients who did not respond favorably after 2 months of treatment with the antimony compounds did not show any further improvement when the course of antimony therapy was prolonged. As long as improvement was observed with tartar emetic injections, such treatment was continued until a cure was obtained. If, however, improvement was not noted after 2 months of treatment, other therapeutic measures were considered, including different antimony compounds, such as fuadin, anthiomaline and antimony sodium thioglycollate and operative procedures. Many of these patients had received 1 to 3 years of tartar emetic therapy prior to admission to the dermatologic clinic of the University of Maryland. In spite of this, it was the rule to give at least 2 months more of tartar emetic therapy before changing the type of treatment.

Antimony sodium thioglycollate was used in the treatment of 2 patients who had previously been treated with tartar emetic. Under this new therapy the lesions healed promptly with 6 and 8 doses, respectively.

Fuadin was administered to 5 cases (*Table 2*); in 1, this was the only drug used. It caused partial healing, but the patient lapsed from treatment and was lost from observation. In 4, fuadin was used to supplement tartar emetic, and in 1 case it caused complete healing; 1 case was

FUADIN	
Number of cases treated	5
Number receiving previous treatment with antimony drugs and given fuadin because of failure of other compounds	4
Number tartar emetic resistant cases to heal with fuadin	1
Number of cases to heal with fuadin alone	0
Outcome of remaining cases	
Three fuadin failures, 2 lost, 1 excised, 1 changed from faudin to anthiomaline did not heal, was excised.	

Table 2

lost from observation, and 2 were treated by excision because of antimony failure.

Anthiomaline was used in treating 13 cases (*Table 3*); 4 received only this drug and a cure resulted in all. In the remaining 9, this drug was used in tartar emetic resistant cases. In 2 of these, complete cures resulted. In the remaining 7, the results were unsatisfactory.

In 3 cases in which the antimony products were ineffectual, x-ray therapy was used. One of these patients had had a partial vulvectomy performed in order to expose completely the base of the disease process. These patients received from 6 to 13 skin units and were observed over a period of 4 months. This treatment did not bring about involution of the process in any case.

Sulfathiazole locally in a 5 per cent ointment, sulfapyridine by mouth, and silver nitrate stick locally caused no involution of lesions and were thought to be of no value.

Desiccation was used in treating 3 cases, in 1 of which it was the sole procedure used and a cure was obtained. Both of the 2 remaining

ANTHIOMALINE	
Number cases treated	13
Number receiving previous treatment with antimony drugs and given anthiomaline because of failure of other compounds	9
Smallest number of doses to cause healing	13
Largest number of doses to cause healing	15
Number of tartar emetic resistant cases to heal with anthiomaline	2
Number of cases to heal with anthiomaline as the only antimony drug given	4
Outcome of remaining seven cases	
Seven resistant cases came to operation; 3 complete cures; 4 lost from observation.	

Table 3

OPERATIVE CASES

Case No.	Duration of Disease on Admission	Extent of Lesions	Previous Treatment Used and Amount	Effect of Previous Treatment on Healing	Operative Procedure	Final Outcome
1	3 years	El phantiasis of penis and involvement of anus and rectum	Large amounts of tartar emetic given elsewhere for 3 years	None	Excision of involved area	Partial healing and patient was lost from observation
2	2 years	Involvement of inguinal regions, vulva and thighs	Large amounts of tartar emetic for 2 years	None	Excision and skin grafting	Complete healing
3	4 years	Vulva and perineum	Treatment with tartar emetic for 3 years	None	Excision	Complete healing
4	5 years	Vulva and perineum	Treatment with tartar emetic for 3 years	None	Excision	Complete healing
5	5 months	Localized lesion on vulva	None	None	Excision	Complete healing
6	6 months	Localized lesions on penis and inguinal regions	None	None	Excision	Complete healing
7	2 years	Penis and both inguinal regions	Tartar emetic for 2 years	None	Excision of inguinal lesions	Complete healing of excised areas
8	3 years	Pubic area inguinal regions and penis	Tartar emetic for 2 years	None	Excision of involved area and skin grafting	Complete healing
9	6 months	Localized to labia majora	Tartar emetic for 6 months	Slight healing noted	Excision	Complete healing
10	8 months	Localized to labia majora	Tartar emetic for 8 months	Slight healing noted	Excision	Lost from observation
11	3½ years	Extensive involvement of penis, scrotum, inguinal regions and urethra	Tartar emetic for 3 years, anthiomaline for 6 months	No healing noted	Excision and skin grafting	Complete healing
12	3 years	Extensive involvement of penis, scrotum and inguinal regions	Tartar emetic for 3 years	No healing noted	Excision and skin grafting	Complete healing
13	8 years	Inguinal region and vulva, vagina and anus	Tartar emetic for 3 years, fuadin for 5 months, anthiomaline for 5 months	Slight healing noted	Excision of inguinal areas. Desiccation of vulvar lesions	Slight healing noted; patient had tuberculosis and was lost from observation
14	2 months	Labia majora and vagina	Tartar emetic 10 doses, 54 c. c. fuadin 1	No healing	Excision	Complete healing of areas
15	3 years	Vulva, inguinal regions, vagina and urethra	Tartar emetic and anthiomaline	Slight healing noted	Excision of elephantiasis of vulva	Excised area healed; other areas active; patient to complete treatment with tartar emetic
16	8 months	Inguinal regions	Tartar emetic for 6 months	None	Excision of involved areas	Partial healing and patient lost from observation
			By Desiccation			
1	1 year	Vulva, localized lesions	Tartar emetic for 6 months	None	Desiccation	Complete healing
2	9 months	Localized to labia majora	27 doses of tartar emetic	No healing	Desiccation	Complete healing

Table 4

cases were tartar emetic resistant; 1 was cured by desiccation, and in the other this method failed and excision was employed.

Surgical excision was employed in 16 cases (*Table 4*). In 13 of these cases, operation was thought to be indicated because chemotherapy had failed and in 1 case desiccation had failed. Nine of these had complete healing following operation (*Figs. 1, 2* and *3*). Five had partial healing, but were lost from observation. In 2 cases the results were unsatisfactory, due partially to lack of cooperation and unsanitary environment.

In order to note whether antimony compounds were necessary in the cure of granuloma inguinale, 2 patients with localized lesions who

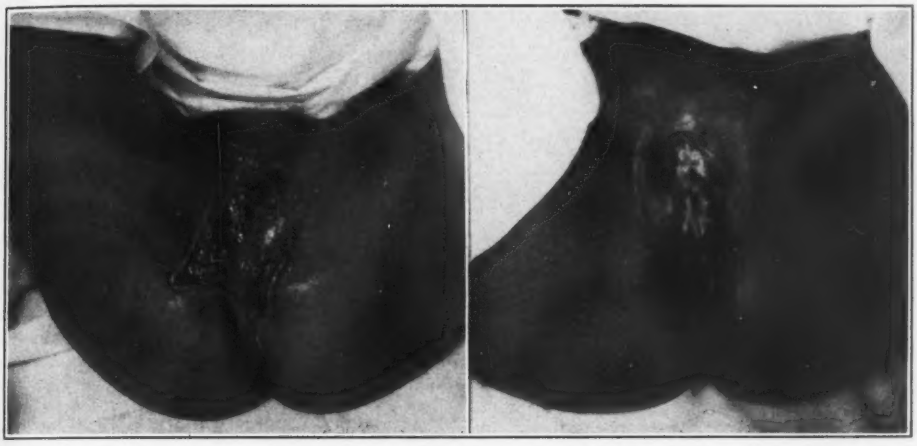

Fig. 1

A, left.—Extensive lesion, three years' duration. Failed to heal under 68 injections of tartar emetic and fuadin.
B, right.—After excision and grafting.

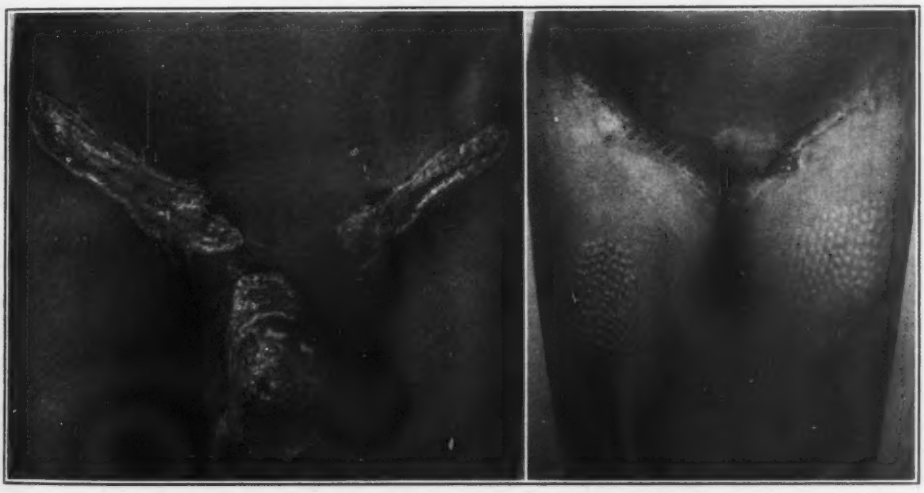

Fig. 2

A, left.—Extensive lesions treated with tartar emetic four years before admission to the clinic, then received six months' anthiomaline without effect. This was the result at the end of chemotherapy.
B, right.—After final operation, complete cure. It was necessary to remove scrotum and penis.

Fig. 3

A, left.—After seven years of chemotherapy, marked scarring and active lesions. Note glans embedded in scar tissue.
B, right.—Following second operation, complete healing.

had no previous treatment were treated only by excision of the ulcers. Complete healing resulted.

CONCLUSIONS

(1) This report is based on the results obtained in the treatment of 62 patients with granuloma inguinale.

(2) Sixteen patients, after varying periods of treatment, lapsed and were lost from observation.

(3) Of the remaining 46 patients, 19 were cured by tartar emetic; 9 by other antimony compounds, and of these 5 had already received tartar emetic; 60.8 per cent were cured, therefore, by antimony compounds.

(4) In 10 patients in whom all chemotherapy failed, operative procedures were successful in causing a cure, 9 by excision and 1 by desiccation.

(5) Three who had not received any antimony therapy were cured by operative procedures, 1 by desiccation, and 2 by excision.

(6) Of the 46 patients who did not lapse treatment, 41 or 89.1 per cent, were cured by one or more of the methods employed.

(7) In localized lesions, excision should be considered, thereby avoiding numerous injections of drugs.

(8) In antimony resistant cases, even in those with extensive involvement, surgical procedures should be employed.

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DISCUSSION (*Abstract*)

Dr. M. F. Engman, Jr., St. Louis, Mo.—A work of this nature will serve us all as a reference and guide to treatment of granuloma inguinale for some years to come. In St. Louis we are seeing fewer and fewer cases of granuloma inguinale in our clinics and even at Homer Phillips Hospital, a new hospital for negroes.

I was somewhat surprised at the poor results Dr. Robinson had with fuadin. Some recent reports in the literature have been more favorable.

In evaluating results of treatment with negroes, one must always take into consideration the tendency of negro patients to be dilatory about coming to the clinic. We find that where long courses of regular treatment are required, negro patients are inclined to skip a week or a month or several months. This may have something to do with statistical studies in results of treatment. Dr. Robinson's paper did not take up a discussion of the etiology of this disease. However, the etiology is most interesting to all of us. It is at present generally believed that the Donovan bodies are the causative agent. Their exact nature is at present unknown. Greenblatt suggests that they are protozoan bodies rather than a filterable virus. I am inclined to agree with this hypothesis and I point to Dr. Robinson's paper as supportive evidence in that virus diseases in general are notoriously resistant to any chemotherapy. Granuloma inguinale does respond to chemotherapy.

Dr. C. C. Dennie, Kansas City, Mo.—In a meeting of the American Dermatological Association six or eight years ago a moving picture was shown of what was supposed to be the causative organism of granuloma inguinale. Noguchi demonstrated in this picture film an organism which had a proboscis on the front end, looked like a maggot from one direction, and had a nucleus right in the center of it.

At that time, it was suggested that this was the Donovan body and that this was not a virus disease at all, but due to an organism belonging to some of the lower forms of animal life. I have heard nothing further about this organism.

Dr. Robinson (closing).—In all of the cases that made up the material for this paper, the Donovan bodies were demonstrated. I do not believe that Donovan bodies have been conclusively classified; that they are not a filtrable virus has been proven, and Greenblatt of Georgia has reported that he has been able to obtain these organisms in pure culture from a pseudobubo and cause the disease by injection into human beings. So far, we have not been able to verify this work. In answer to Dr. Dennie's question concerning the organism which Noguchi reported, we have never seen such an organism.

THE TECHNIC OF PYELOGRAPHY*

By H. McCLURE YOUNG, M.D.
Columbia, Missouri

In giving an ordinary urethral irrigation, according to the method of Janet, as is done in the treatment of a total urethritis, it is a well established principle that the full force of a column of fluid must not be released suddenly. Pressure must be very gradually raised until by a constant, but very gentle pressure gradually increased, we tire out the external sphincter, causing it to relax and permit our irrigating fluid to pass backward through the posterior urethra into the bladder. Note that the technical requirement here is not simply gentleness but also slowness, that is, the full amount of pressure required to relax the external sphincter must be attained very slowly. If this principle is observed, the irrigation can be given without pain or any conscious resistance on the part of the patient. If the surgeon is in a hurry and ignores this principle, we all know what will happen. The sudden impact of a column of a fluid against the external sphincter will cause it to go into spasm. There will be sharp dilatation of the urethra in front of the sphincter. There will be pain, there may be a slight tear of the mucosa with bleeding. There may also be a spreading of the infection into the urethral follicles, or along the lymphatics into the submucosa.

This is the most familiar example of the general principle which I wish to emphasize. It is not only the sphincter muscle of the bladder which responds with spasm when suddenly put on the stretch. Practically every muscle of the body will do the same thing. The bladder, for example, will tolerate more fluid when the fluid flows in slowly than it will when fluid is rapidly injected. A smooth muscle as well as a striated muscle is capable of spasm. Practically the entire urinary tract is provided with muscle of some sort. Muscular tissue is found not simply in

*Read in Section on Urology, Southern Medical Association, Thirty-Fifth Annual Meeting, St. Louis, Missouri, November 10-13, 1941.

the wall of the ureter and kidney pelvis but also in the calyces all the way up to the fornices surrounding the papillae. It must, therefore, be a cardinal principle in the taking of pyelograms to introduce a fluid in such a manner as never to put any portion of the musculature under sudden tension. If the internal pressure in the kidney and along the ureter must be raised, it is imperative that it be raised gradually. If we put it suddenly on the stretch, it will respond with sharp contraction.

All authors who have concerned themselves at all with the taking of pyelograms, emphasize the necessity of gentleness. But I do not find that the necessity of slowness, of gradual increase of pressure, when injecting fluids through a ureteral catheter, has received the amount of attention which it deserves. We all recognize that overdistention of a kidney pelvis may result in extravasation. The fluid may pass upward through the kidney tubules or there may even be a rupture in one of the fornices, permitting extravasation into the kidney substance. I have not seen it emphasized that such rupture may be the result not only of overdistention through an excess of fluid, but also of a too rapid injection of even a small quantity. Overdistention is a relative term. A hollow viscus, which in a state of rest will accommodate 7 c. c. of fluid, may not accommodate more than 4 c. c. if it is excited to a state of irritability by the roughness of the operator.

In determining, therefore, the best method of injecting fluid through a catheter into the upper urinary tract, we must give preference to a method which makes it possible to regulate the degree of pressure exerted and raise that pressure very gradually, never allowing the delicate musculature of the ureter or kidney to receive anything like a sudden kick. The method must be one which gives the surgeon instant control. It must be possible for him to lower the pressure or cease injection instantly without the delay of a split second. Also, in addition to a perfect control of positive pressure, the surgeon must be in a position to reverse this positive pressure and substitute a negative pressure and that instantaneously. The syringe used must be one through which a very definite suction can be employed. If, for example, a pyelographic medium is being slowly injected into the kidney and the patient suddenly complains of a sharp pain, the injection must cease immediately and immediately after x-ray has been taken suction must be applied to withdraw the fluid. Every detail of the procedure must be under such control of the surgeon that there will never be any delay. When he says "Shoot!" the x-ray technician, with his finger on the button, must shoot instantly. If the surgeon wishes to withdraw the fluid, he must be in position to do so instantly without changing his syringe or permitting any delay from any cause.

Two methods have been rather widely used for injection of fluid preparatory to the taking of pyelograms. These may be described as the gravity and the syringe methods. My impression is that many surgeons today regard the gravity method as a little safer than the syringe method. Their argument, as I understand it, is that where the gravity method is used, it is impossible for the surgeon to use any more pressure than that supplied by the column of liquid in his percolator. Also the amount of pressure can be measured in millimeters of mercury or their equivalent. Where the syringe method is employed on the other hand, it is not possible for the surgeon to measure conveniently the amount of pressure employed in millimeters of mercury. It is also true that the unregulated thumb is capable of applying more pressure than is wise, so that it becomes possible to do more harm with a syringe than where the gravity method is used. This is all true enough. It ignores the fact, however, that while a syringe is capable of more roughness in handling, it also lends itself to a much greater degree of gentleness. The surgeon using his thumb on the piston of an all-glass syringe can increase pressure very gradually, can stop it instantly with a precision which must be certainly very difficult where the gravity method is used. It would, of course, be theoretically possible gradually to increase pressure when

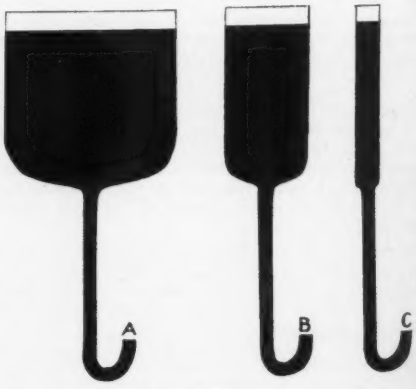

Fig. 1
The pressure at A, B and C is the same.

using the gravity method by gradually elevating the percolator. I have not seen this recommended, however, and it sounds complicated. Certainly if a percolator is set at a fixed height and a flow is started by the release of a pinch-cock on the rubber tubing, the full force of that column of fluid is going to be felt instantly at the distal end of the ureteral catheter. There will be no variation of pressure until the surgeon or someone else closes the pinch-cock, when all pressure will cease. I do not question that other

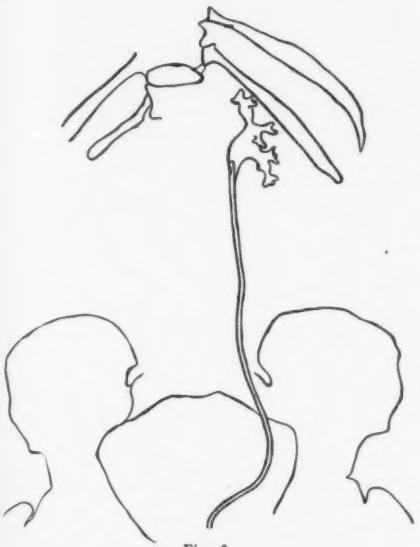

Fig. 2
Catheter in kidney pelvis.

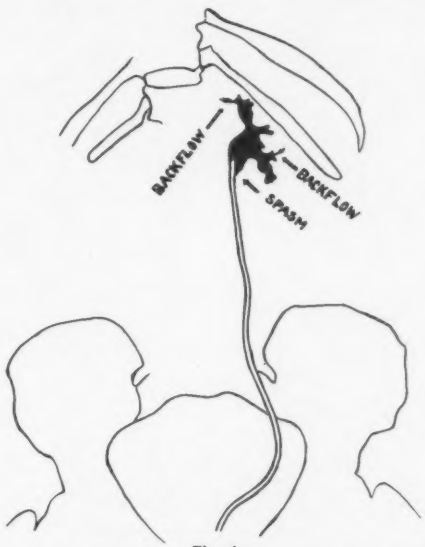

Fig. 4
Fluid has been injected rapidly. Exciting spasm with backflow.

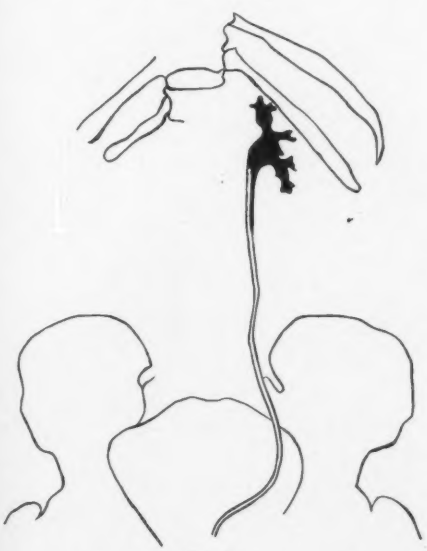

Fig. 3
Fluid has been injected slowly. No spasm.

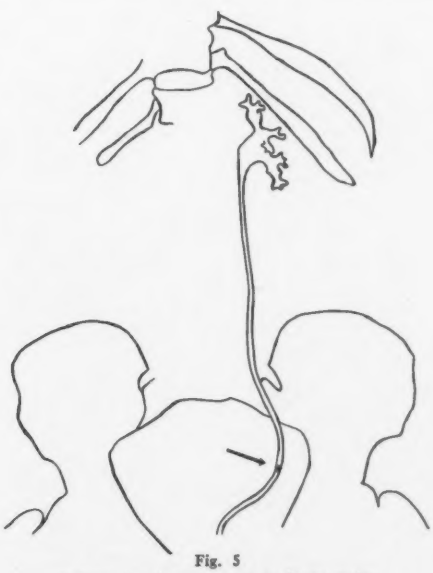

Fig. 5
Catheter has been arrested in lower ureter.

methods could be devised for regulating pressure when using the gravity method. As far as I know, they are not in general use and I hardly think that any of them would place the irrigating fluid so immediately and completely under the surgeon's control as does an ordinary glass syringe.

Two types of syringe suggest themselves for use in this connection: (a) the syringe provided

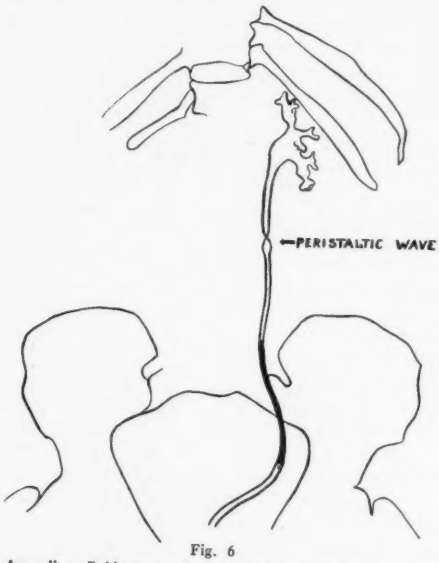

Fig. 6
Ascending fluid approaches descending peristaltic wave.

Fig. 8
Pelvis has been filled without spasm or extravasation.

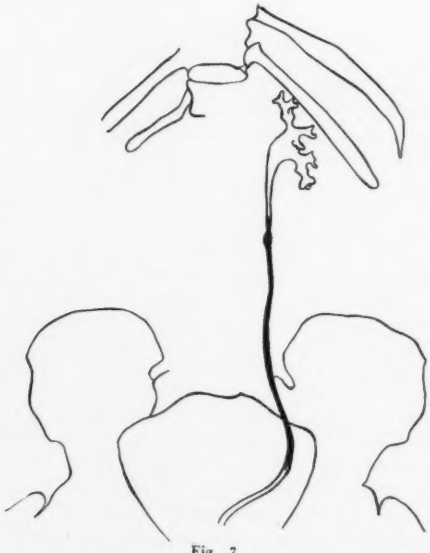

Fig. 7
Impact of peristaltic wave successfully overcome by slow gentle pressure.

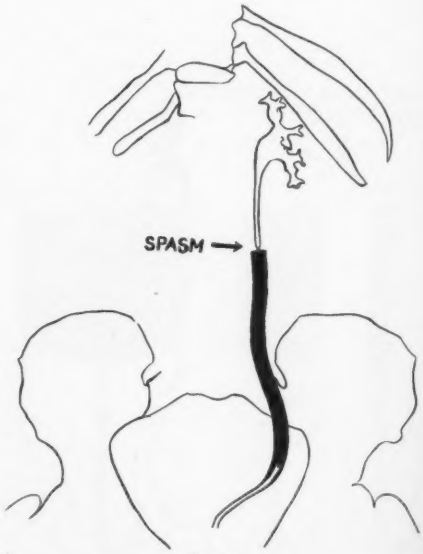

Fig. 9
A too rapid injection has caused a reflex spasm on impact with peristaltic wave.

with a rubber bulb, (b) the all-glass piston syringe. For many uses a "bulb-syringe" can be used with less danger of trauma than any other kind of syringe. This is true in treating ordinary urethritis, for example, and most of us will agree that in this sort of work a piston syringe is a little too harsh in its action. Bulb-syringes are made which are provided with a tip which fits over the end of a ureteral catheter and such a syringe enables us to inject fluids slowly and gently into the kidney. My objections to this type of syringe are two: (1) it cannot be completely filled with the irrigating fluid. There is always a cushion of air above the fluid. As air is compressible, the pressure in the kidney will vary with the amount of air in the syringe and not simply with the amount of pressure which the surgeon's thumb exerts. Also, some air may be inadvertently injected, giving rise to a negative spot in a kidney pelvis and some confusion in diagnosis; (2) a rubber bulb cannot be relied upon to exert suction that will really be effective in case the surgeon wishes suddenly to reverse the direction of the flow.

I wish to describe a method of making pyelograms which I have employed for many years and which has given me entire satisfaction. In my hands at least I feel satisfied, that it is safer than any of the other methods described, that it gives reliable pictures with a minimum of artifacts and misleading skiagrams due to spasm, incomplete filling or extravasation. We should remember in taking pyelograms, that we aim first of all to safeguard our patients against accidents, not only serious accidents, but temporary sharp pain or fever that may keep them in the hospital for a few days. We wish also to get a maximum number of clear and reliable skiagrams, such as we cannot get if our shadows are constantly being distorted by painful ureteral spasm, pelvic spasm or calyceal spasm. I employ a 10 c. c. all-glass piston syringe for routine work; and for connection with the ureteral catheter, I employ a hypodermic needle. The needle must fit into the lumen of the catheter very snugly so that there can be no leakage around it. If a No. 5 ureteral catheter is employed, it will be found that either a 20, a 21 or 22 needle will fit it snugly.

There must be perfect coordination between the surgeon, the x-ray technician, and the patient, if good skiagrams are to be obtained. Let us assume that catheters have been passed all the way up into the kidney pelves on both sides. There has been a free flow of urine from both sides and specimens have been collected for bacteriologic study. We now wish to get pyelograms of both kidneys. The surgeon should start out with a measured quantity of skiagraphic medium in his syringe, let us say, 8 c. c. All air is expelled from the syringe. The needle is then fitted into the end of the catheter and care must be taken that it fits snugly so that the entire connection is leak proof. The surgeon now seats himself in such a position that the syringe is in pretty close alignment with the patient's face. Thus the surgeon can observe the fluid in the syringe and the patient's expression by a mere shifting of the eye without the necessity of turning the head. The surgeon then says, "Are you ready?" and the x-ray technician replies, "Everything set." The technician stands with his finger on the button. Very slowly the surgeon injects the pyelographic medium, watching the patient's expression as he does so. If an expression of pain or anxiety passes over the face of the patient, the surgeon ceases his injection. If, however, there is no evidence that the patient feels discomfort, 7 c. c. of fluid are injected and the surgeon says, "Shoot." The technician says, "Take a deep breath—hold it." He presses the button and the picture is taken. The technician says, "Breathe." The patient again breathes and the surgeon aspirates the skiagraphic medium from the kidney pelvis. Sometimes the kidney pelvis will not hold 7 c. c.; sometimes it will hold considerably more. With the above technic, however, good pictures may be obtained in either case. If the kidney pelvis is very small, the fluid, when injected very slowly, will come down into the ureter alongside the catheter. This gives us a good picture of the upper ureter and especially of the ureteropelvic junction. If the kidney pelvis has a normal capacity of something like 10 or 11 c. c., the fluid, when injected slowly enough, will find its way into all the calyces and give a fairly satisfactory picture.

Assuming that a right pyelogram has been made without causing the patient discomfort and that the greater part of the pyelographic medium has been sucked out, it is perfectly safe to repeat the procedure on the opposite side. It need scarcely to be said that the surgeon is provided with a double set-up in advance so there can be no cross infection. If the surgeon wishes, he may wait until the skiagram of the right side has been developed and studied before taking the skiagram of the left side. By this technic, it is perfectly possible without disturbing the patient to get bilateral pyelograms at a single sitting although they are not on the same plate. If the patient has complained of the slightest pain when

the first skiagram was made, the second one of the opposite side is not made until the first has been so studied. If there is anything suggesting extravasation or pyelovenous backflow, I believe it is well to postpone the taking of a pyelogram on the opposite side for some later occasion.

Let us go back now to the case where the patient complains of pain after only 3 or 4 c. c. of fluids have been injected. As has been said, the surgeon will cease his injection at once, but he will also have the picture taken at once. Afterwards, he will suck out the fluid. Note that we do not wait for the patient to complain of pain. We are guided by his facial expression and act before he has time to speak.

In the above, I have assumed that the tip of the catheter is in the kidney pelvis and that the fluid is slowly injected. Let us assume for a moment, that the surgeon forgets himself and injects it rapidly. The sudden kick delivered to the musculature of the kidney pelvis and calyces causes them to contract and also there may be a sudden contraction at the ureteropelvic junction. The catheter will be firmly grasped at this point, preventing any exit of fluid along the ureter beside the catheter. All this limits the capacity of the pelvis very sharply and the rigidity of the muscles may cause small ruptures of the mucous membrance. There will be pain, hemorrhage, and extravasation, even though a relatively small quantity of fluid has been injected. It is not my purpose to discuss the whole subject of extravasation of pyelographic medium. I wish merely to point out the mechanism of its production. I believe it results more often from a sudden increase of pressure than from the injection of an excessive quantity of fluid per se. Large quantities of fluid can be injected into the kidney pelvis, even quantities greatly exceeding the pelvic capacity, provided injection is made very slowly, giving time for the fluid to escape through the ureter alongside the catheter. I have often injected 50 c. c. of tribromethyl alcohol solution into a kidney pelvis through the catheter in combating calculi, and I have never known this to give rise to any difficulty, either immediate or remote.

Now let us assume a somewhat different state of affairs. The surgeon has passed his catheter into the ureter for a distance of only about an inch. At this point, it has been arrested. For some as yet unknown reason, it will not go up any further. Or again, the surgeon may not wish to put it up any further, because he wishes to get a ureterogram as well as a pyelogram. The technic of injecting his fluid will be the same as described above, but in this case the fluid has to flow up the ureter in a direction contrary to that of a normal ureteral peristalsis. Let us assume that the fluid injected is ascending very slowly under no undue pressure, when it encounters a descending peristaltic wave. The tightening ureteral musculature will gradually relax precisely as the external sphincter of the bladder will relax when we give a Janet irrigation. There will be no pain, the muscles will simply tire out and permit the fluid to pass upward into the kidney.

But let us suppose the fluid is ascending rapidly under considerable pressure, when it meets the descending peristaltic wave. There will be a distinct shock. The ureter, instead of expanding, will contract sharply; this will cause a sudden elevation of pressure below the point of contraction. Here, the musculature, which is not yet involved in the peristaltic wave, will relax. The skiagram will show a much dilated ureter below the point of contraction with no skiagraphic medium above this point. We may think even that we are dealing with an organic stricture of the ureter. We are especially likely to be misled if the point of contraction corresponds with the tip of the catheter. Of course, it does not always correspond with it by any means. The skiagraphic medium may have progressed a considerable distance up the ureter before encountering a peristaltic wave and then at least we will know that the difficulty in passing the catheter up was not due to stricture at the point of its arrest.

Such pictures are often obtained before the surgeon has injected more than 2 or 3 c. c. of fluid. I feel personally convinced that accidents are just as common where a small quantity of fluid is used as they are where a large quantity is used. Of course, we must take the utmost care never to overdistend a kidney pelvis, but we should remember always that the kidney, if given time, has a mechanism for defending itself by drainage through an expanding ureter, and, that it is probably more dangerous to defeat this mechanism by exciting spasm through sudden increase of pressure than it is slightly to exceed the normal capacity of the pelvis where slowness and gentleness constitute our rule of action.

DISCUSSION (*Abstract*)

Dr. J. Ullman Reaves, Mobile, Ala.—Possibly very few of us in this room have the same identical detailed technic in our pyelographic work. As long as this difference exists in us as individuals it is timely that such papers as Dr. Young's be given at our meetings.

Whatever our method of introducing the pyelographic media, gentleness must be our watchword. The method of obtaining this gentleness will no doubt differ in us as individuals, but the ultimate end is the same. Dr. Young advocates that the prime factor of gentleness is the slowness of administration of the media. This is undoubtedly a point well taken. It must also be remembered that gentleness can be interpreted by the extent of the pathologic condition present in the given case, that is, gentleness in one case would be roughness in another. An acute condition anywhere in the upper urinary tract will naturally respond more violently to manipulation than a chronic condition which has accustomed itself to more or less back pressure over a period of time. Over distention in an acute pathologic condition can be evidenced more readily than that where the chronic condition with pyelectasis and ureterectasis is and has been present.

Those of us who believe like Miley Wesson that all the ills subject to pyelography can be aleviated by the use of the gravity method of filling the kidney pelvis will need to think carefully over what Dr. Young has told us here today. As we discarded the gravity method of doing pyelograms years ago we have no comment to make except to add our approval of what Dr. Young has said.

We use the rubber bulb syringe with the tip that fits over the catheter, and fail to find any disadvantage in it, but we are thoroughly aware of the objections that Dr. Young has to this method. In our hands better results are obtained with this than we could with a piston syringe, and we never lose sight of the fact that air is compressible, and that the air above the pyelographic fluid in the bulb syringe can exert more pressure than we really think that we are giving or exerting. Our way of overcoming this is to collect the urine and examine it microscopically before any pyelographic medium is injected in either kidney pelvis. As to Dr. Young's other objection to the rubber bulb syringe, we are well aware that the rubber bulb is inadequate to produce suction in any such ratio as a piston syringe, and we believe that if the upper urinary tract is so inflamed that the pressure exerted starts a spasmodic condition, the suction exerted by the piston syringe would only add to this aggravation by its sudden pull which is hard to regulate.

Undoubtedly the method minutely described by Dr. Young of injecting pyelographic media and making pyelograms brings excellent results in his hands, and I do not wish to pluck one laurel from such a glorious tribute to pyelographic technic. However, the method used by us is so different in detail that I will briefly outline it. After our ureteral catheters are in place and urine is collected we make no attempt at pyelography until after a microscopic examination of the urine from either kidney is handed to us. Then with an asepto syringe 2053 we inject slowly first the kidney which has the best urine microscopically, then the one where the microscopic picture is more abnormal. We do not hesitate to make double pyelograms unless the patient is extremely ill, and then we make double pyelograms if in our judgment there is less risk in double pyelograms than in another cystoscopy. Gentleness and slowness are the watchwords in injecting with this syringe, which gives a minimum amount of ureteral spasm or subsequent kidney colic. The catheters are now withdrawn from the kidney pelvis, if they were fortunate enough to enter, down to the pelvic brim, and further injection of 2 c. c. of the pyelographic medium is made through each catheter into each ureter. A serial pyeluo-ureterogram is next made of the side where the most disease was evidenced by urinalysis. Pictures are now developed and catheters left in place and the cystoscope removed. After these pictures are viewed further roentgenograms are made as indicated, such as an upright picture of the patient with pyelographic medium in each kidney pelvis.

Practically all of our cystoscopic work is done in our office, as we prefer to work our cases up before hospitalizing. This is our way of solving an economic problem, as most of our patients cannot afford hospitalization and urologic check-up at the rates charged.

Dr. King Wade, Hot Springs, Ark.—It is agreed that there are certain contraindications to retrograde pyelography such as advanced dysfunction, extreme old age, systemic diseases with marked weakness, emaciation and anemia, and decompensated cardiovascular disease.

The importance of gentle manipulation in the passage of the cystoscope and catheterization of the ureters should be emphasized. A great deal of postcystoscopic unpleasantness is due to unwarranted manhandling of the instruments. Preparation of the patient for pyelography is important. The highly nervous individuals seem more likely to experience discomfort and should have some preoperative sedative.

We all agree with the essayist that gentleness in the injection of the opaque medium is paramount and cannot be overemphasized. It is desirable, if possible, to determine the capacity of the kidney pelvis by aspiration before the injection is made. However, this is not always possible unless the catheter is in the proper position. Occasionally there is a hypersecretion of urine which might be misleading as to the actual capacity of the pelvis. Over-distention of the kidney pelvis carries with it the danger of extravasation with dissemination of infection into the kidney substance. This is not to be confused with the peculiar defect noted in parenchymal diffusion of the medium which is characterized by radiating lines extending fan-wise from the calyx. This phenomenon is due to pyelovenous back-flow or to filling of the tubules, or both.

A weak solution of opaque medium is preferable for injection in large hydronephrotic sacs, while in the case of renal stones of poor opacity, a stronger solution is used. Drugs held in suspension are not desirable for retrograde pyelography.

In pyelo-ureterography the method of simply filling the kidney pelvis and slowly withdrawing the catheter with gradual injection of the medium along the ureter is usually satisfactory. At times, however, it is desirable to plug the lower end of the ureter with a catheter designed for this particular method of pyelo-ureterography.

Serial pyelography as advocated by Moore is of decided advantage in determining the emptying time of the kidney pelvis. When there is marked retention, it is advisable to re-insert the catheter and aspirate the opaque medium.

Bilateral pyelography may be done where the patient's renal function approximates normal, but its employment routinely is to be condemned. I find myself doing fewer and fewer bilateral pyelograms.

Lateral pyelograms are helpful in determining whether opacities in the region of the kidney are intra- or extrarenal. Occasionally a calcified gland in the renal region presents a problem. Lateral pyelograms also demonstrate a forward displacement of the kidney. The anteroposterior position is the one most frequently used and usually suffices. Stereoscopic skiagrams are often helpful in detecting renal disease.

A certain percentage of patients, despite the observation of all rules laid down by the essayist, will have reactions following pyelography. Most of these reactions can be avoided by the intramuscular injection of deproteinized pancreatic extract. We do not advocate these injections routinely, but their use is distinctly indicated in cases where we have detected an irritability of the ureter or pelvis, or suspect an over-distention of the pelvis, or where there is a marked ureteral spasm as evidenced by the tug on the catheter when an attempt is made to withdraw it. Forceful removal of the ureteral catheter where there is spasm will precipitate a more or less severe reaction characterized by ureteral colic. Under such circumstances an injection of deproteinized pancreatic extract should be given before the removal of the catheter.

If we adhere closely to the technic as laid down by the essayist, we will have a minimum of spurious skiagrams and a minimum of discomfort from pyelography.

Dr. T. Leon Howard, Denver, Colo.—A nervous patient must receive more consideration than a stoical patient. If we are going to do a pyelographic study, we should certainly have a proper table upon which to put the patient.

There are hundreds of ureters that will not admit a catheter all the way to the renal pelvis unless the patient is in Trendelenburg position. If the patient is placed on a flat table, we shall have only a partial diagnosis when the examination is over.

Aspirating all of the pyelographic media out of the kidney does not tell us whether the kidney empties. Certainly one wants to know whether the kidney empties itself at the end of a ten-minute period, but if all the fluid is aspirated out, we cannot tell whether there is a ureteral or uretero-pelvic obstruction.

We all make a mistake in putting cold solutions in the kidney. We know what our musculature does when we step under a cold shower. If we put a cold solution into a kidney, we are bound to produce a spasm, and we never take this factor into consideration as a cause of renal colic during the injection of pyelographic media. The fluids should be at body temperature or 100 degrees, which is about rectal temperature.

No patient should be allowed to leave the table until an x-ray has been made in the sitting position, for this gives a true picture of what the kidney does when the patient is up and about.

As to lateral views: do you suppose anybody would take just one view of your arm if it were broken? That would tell only part of the story. Suppose you have an extrarenal tumor that has the appearance of a renal tumor. You cannot tell whether it is a renal tumor or an extrarenal tumor confined to the substance of the kidney, without a lateral view.

Dr. Harry M. Spence, Dallas, Tex.—The opaque pyelogram has been mentioned. It seems to me that a method that has a lot of merit is the simple injection of air to make the pyelograms. I was trained in Boston, and never heard of it until I got to Dallas, and since I have been there I have not heard much else.

This method has a great deal of merit in stone cases, because it accentuates the stone nicely. Also, it has an economic advantage for clinic patients, because one may combine the kidney-ureter-bladder plate with the pyelogram on one film.

Dr. I. G. Duncan, Memphis, Tenn.—For the last two years we have been using "depropanex" with all of our cystoscopies, and we have found that the pain and after-pain and trouble have been cut down probably 75 per cent. There is no reaction, and as far as I know, there is no contraindication. We have used "depropanex" probably in a thousand cases, and have never had trouble from it other than slight soreness in the region where it was administered. That usually does not amount to much.

In patients who have acutely infected kidneys, we prefer to put in ureteral catheters for drainage, and allow them to stay for a few days. We feel that pyelograms can be made more safely at a later date. The less manipulation which is done in the presence of an acute infection, the better.

Dr. Young (closing).—The surgeon must remember that he wants to control the situation at the far end of the catheter. It is not enough to control it at the outside of the bladder. We get a more immediate connection with the far end of the catheter by using the piston syringe which contains no air. It is true it lends itself to a greater degree of force, but it also lends itself to a greater degree of gentleness, since we know that the minute we increase the pressure the least particle with our thumb it is felt at the far end of the syringe, and when we are sucking, the same is true. We cannot rely on that with a bulb syringe with its cushion of air.

Nobody seems to have defended the gravity method. Certainly a few brief remarks about that method may be considered in order.

If we are using the gravity method and controlling the flow with a pinch cock, the minute we release the pinch cock we get the full impact of that fluid at the far end of the catheter. That may be three to five feet of water pressure, and it does not make any difference whether we are using a huge percolator or a burette. If it stands five feet above the level of the patient's body we have the pressure of a column of water five feet high suddenly released.

If we are using a piston syringe, we use only enough pressure to start it to flow, just the amount of pressure we should need to make it flow in the open air, with no resistance. We can gauge with our thumb immediately if it does not seem to flow properly. If we have to increase the pressure to any considerable extent, when we are using the piston syringe it increases gradually. There is no sudden kick.

Just as we get a knee jerk when we hit a man with a hammer over his knee, just so we will get a jerk in the smooth muscle of the ureter if we take off suddenly the protection of the pinch cock.

INDIVIDUALIZED ANESTHESIA*

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Anesthesia has become as important a speciality as any branch of medicine, for the progress made in the past 15 years has been remarkable, and the types of anesthesia developed have been numerous. Today the physician anesthetist not only administers the anesthetic, but he evaluates the operative risk, chooses the anesthetic agent best suited to the individual patient for a specific operative procedure, and the safest method of using it. Because of the development of spinal and regional anesthesia the anesthetist must know the anatomical distribution of the various nerves. In using the gases in anesthesia it is necessary for him to know something of physics, chemistry, physiology and the basic sciences, as well as the pathology and course of disease. With this knowledge at his command he is in a good position to be of real assistance in making the patient safe for anesthesia and subsequent operative surgery.

There are four main methods of producing anesthesia: inhalation, regional, intravenous, and rectal, and for each of these, several agents of proved reliability. These drugs differ in their potency, speed and duration of action, and ability to cause deleterious effects on the patient. The anesthetic agent or combination of agents which will be adequate for the anticipated operation and least deleterious to the patient should be chosen.

Some of the factors making individualized anesthesia necessary will be considered in a general way.

Anesthesia in Emergencies.—The administration of an anesthetic to a patient in an acute surgical emergency is fundamentally the same as for ordinary surgery. However, it may not be possible to allow the usual time for the preanesthetic drugs to produce their effect. It has been my practice in such emergencies to administer morphine and scopolamine intravenously. Volpitto[2] prefers dilution of the drugs in 8 to 10 c. c. of distilled water and slow intravenous administration, watching carefully for any untoward reaction. If a hypodermic syringe is all that is available, the drugs may be administered slowly by drawing blood up into the syringe and alternatingly injecting and withdrawing the mixture. The peak action when given intravenously, can be expected in about 1/3 (20-30 minutes) of the time required by the subcutaneous route.

Sise[3] mentions a full stomach as an important consideration in emergency surgery. A full stomach may be present if the accident occurred within 3 hours after the last meal. Even though the surgery may not be done for longer than 3 hours after the last meal yet digestion usually is at a standstill from the time of the accident.

Vomiting may take place on induction and bring to naught an operative procedure otherwise well planned. There is danger of aspiration of some vomitus into the lungs with subsequent atelectasis or pneumonia terminating fatally. In such emergencies where the patient has a full stomach, spinal, regional, or local is the anesthetic of choice, if the nature of the operation permits. If general anesthesia is indicated the stomach may be lavaged so as to forestall any aspiration of vomitus. If circumstances are such that lavage cannot be done, a rapid induction with cyclopropane and the insertion of an intratracheal tube may be resorted to. If vomiting occurs in spite of this, suction and Trendelenburg position will usually prevent aspiration.

The safety of anesthesia in emergencies is dependent upon the skill and experience of the anesthetist who administers it.

Apprehensive Patients.—Preoperative examination reveals a group of patients who are extremely excitable and anxious about the outcome of the operation. In these patients it is advisable to remove the psychic fear by increased preanesthetic medication.

In some of the more severe cases in which there exist hyperesthesia and hyperactivity of the nervous system, the patient should be put to sleep in his own bed. Paraldehyde or tribromethyl alcohol (avertin) may be used per rectum. Sodium ethyl thiobarbiturate (pentothal sodium) or N-methylcyclohexenylmethylbarbiturate (evipal) may be administered intravenously, then the anesthesia can be completed with one of the gases, ether, regional or spinal.

In the handicapped patient the whims of the patient should be given only secondary consideration. The anesthetic which is safest should be used.

*Read in Section on Anesthesia, Southern Medical Association, Thirty-Fifth Annual Meeting, St. Louis, Missouri, November 10-13, 1941.

Chronic Alcoholics.—These constitute a group which is resistant to general anesthetic agents. If the condition of the patient and the type of operation warrant it, spinal anesthesia is to be preferred.

Age.—The two extremes of life, childhood and old age, require careful consideration in choosing the best anesthetic agent.

Usually children should have a general anesthetic rather than a spinal, regional or local. They tolerate anesthesia well and because of their relatively high basal metabolic rate[4] require more premedication in proportion to their size. Garofalo[5] says that intravenous anesthesia is contraindicated in children under 10-12 years of age because of the smallness of their respiratory passages and subsequent tendency to hypoxia or oxygen want. Then, too, it is more difficult to keep the needle in their veins. Some authorities[6] disapprove of closed gas anesthesia in children under 5 years of age because of the resistance to breathing in the apparatus and because of the proportional dead air space in the mask and tubing. Children tolerate open drop ether very well and if adequate premedication is given so that the ordeal is minimized for the child it is one of the best anesthetic agents.

Schaerrer[7] says:

"Leaving aside the unnerving effect of a screaming child on the personnel of the operating room and the horrible memory which the child may carry with him to the end of his days, there remains the more serious matter of immediate physical harm to the terrified patient. The psychic reaction of a normal child in a state of panic can be compared to that of an adult with severe hyperthyroidism. The importance of minimizing psychic trauma in hyperthyroidism is well recognized, but how often does a surgeon give a child patient the consideration which he routinely gives a toxic thyroid patient?

"An excited child often cries a great deal and has overworked suprarenal glands. The psychic reaction accelerates the metabolic processes and a depletion of carbohydrates during anesthesia. These factors are of prime importance to the anesthetist who wishes to secure anesthesia with as little of the anesthetic agent and with as little harm to the body as possible. It is well known that the amount of anesthetic required to produce surgical anesthesia depends a great deal upon the metabolic rate of the patient. Thus if the metabolic rate can safely be reduced to a minimum, less anesthesia will be required. In children, the preoperative employment of sedatives is an excellent way to eliminate the increased metabolism which arises from excitement and fear of what is to come."

Induction with divinyl ether (vinethene) makes the invariable struggling in children brief and it does not increase the anesthetic hazard if its signs are familiar to the anesthetist.

Regardless of the form of anesthesia employed, in very young patients it is imperative that small doses be administered slowly since children are very sensitive to a rapid induction. They require more oxygen in proportion to their size than do adults, so abundant oxygen should always be given during anesthesia induction and maintenance. Each individual case must be handled on its own merits, the advantages and disadvantages weighed, and the best anesthetic agent selected.

In the aged, relatively small amounts of the anesthetic are required to produce general anesthesia. Likewise in premedicating an older person for anesthesia, very small amounts of the basal drugs are required, the error usually being made on the side of too much, rather than too little premedication. If the patient is cachetic or debilitated and the location of the disease is such that regional or local can be used, it is the anesthetic of choice, because the anesthetic hazard is less than with inhalation. Lundy and Mousel[8] believe that pentothal sodium is the ideal anesthesia in the aged, because of the small amount required, and because it is rather non-toxic and is tolerated well. It is of course contraindicated if there is liver damage or the patient is for any reason a grave anesthetic risk. Cyclopropane[9] is a favorite in the aged. It allows adequate relaxation, abundance of oxygen, ease of induction and recovery and is not irritating to the lungs, bronchi, or damaging to the kidneys, liver or other organs. Ether is the least desirable in the aged because of its irritating properties to the bronchial tree, its toxic action on the kidneys and liver and its disturbance of metabolism. If an explosive agent is contraindicated because of the necessity of using a cautery, then nitrous oxide oxygen may be considered, but the cell damage from hypoxia, often associated with nitrous oxide anesthesia, must be kept in mind. In this case the use of intravenous pentothal with oxygen inhalation might be the choice. The type and site of surgery proposed and the physical condition of the patient will determine the drug or combination of drugs to be selected in the final analysis.

The patient who is not handicapped by any pathologic process and who is not at the extremes of life usually will tolerate almost any type of anesthetic. His preference for a certain type of anesthesia, if the anesthetic is suit-

able for him, should be granted. However, the anesthetist should not yield to the patient's choice of anesthetic agent if it is not safe and adequate for the surgery to be done.

I agree with Stewart,[10] who opposes any routine plan of discussing with the patient the type of anesthesia to be used for any proposed surgical procedure. Often the mere mention of an anesthetic agent, or technic unfamiliar to the patient, arouses his curiosity and suspicion. He should be assured that the anesthetic selected for him will be for his good and will be administered with the greatest care and skill of a trained and experienced anesthetist.

Some Common Pathologic Processes Influencing the Choice of the Anesthetic Agent.—Scott[11] mentions two factors that must be kept in mind in choosing the best anesthetic for a given patient handicapped by some pathologic process. First, the advantage of that particular anesthetic in relation to the type and degree of the handicap; and second, the disadvantage of that anesthetic in relation to the handicap. Consequently, it is impossible, ordinarily, to say dogmatically that one anesthetic or another is preferable for all instances of a given handicap. The factors pro and con must be carefully weighed and the anesthetic best suited selected.

Shock.—The accepted shock treatment (1) heat, (2) parenteral fluids (or blood if from hemorrhage) and (3) Trendelenburg position should be started before any anesthetic agent for any operation is begun. Most authorities feel that spinal anesthesia is usually contraindicated in shock. Regional or local anesthesia probably carries less risk than general anesthesia if the surgery proposed can be done under this form of anesthesia. Cyclopropane is an ideal agent in shock. Nitrous oxide, and to a lesser degree, ethylene because of their low oxygen content in anesthetic mixtures, are less desirable than cyclopropane. Chloroform should be avoided because of its marked toxicity. Ether can be used, but because of its toxicity is not the agent of choice. Basal anesthesia and heavy preanesthetic medication are to be avoided with patients in shock.

Anemia, Liver or Kidney Damage.—A relatively smaller amount of the anesthetic agent is required to produce anesthesia in anemia, and, because of the diminished oxygen carrying power of the blood, care must be used not to produce oxygen want. If the nature of the operation demands a general anesthetic, cyclopropane is the agent of choice. Nitrous oxide might be used, but the low oxygen factor must be kept in mind. Spinal anesthesia is considered by many to be contraindicated in anemia, as also is intravenous[12] anesthesia. Local or regional anesthesia is to be preferred in anemia, liver or kidney damage, if the operation is of such a type that it can be employed. A combination of regional and gas anesthesia might be the choice in the final analysis. Tribromethyl alcohol and the barbiturates are largely destroyed by the liver and to a great extent eliminated by the kidneys, so are contraindicated.

Gravely Toxic Patients.—In cases in which the patient is in a grave condition, hypotensive anesthetics are to be avoided and local or regional anesthesia should be used. When it is necessary to use general anesthesia, cyclopropane is the agent of choice. Tribromethyl alcohol and barbiturates are to be avoided. Small doses of morphine and scopolamine may be used as preanesthetic medication.

Respiratory Affection.—In case of tuberculosis, acute pulmonary disease, influenza or bronchitis, inhalation anesthesia is contraindicated, especially the irritating agents, as ether. The choice lies between the various forms of local and regional anesthetic drugs. If the nature of the operation demands general anesthesia, gas may be used, since the gases are relatively non-irritating. Low oxygen mixtures are undesirable when there is pulmonary disease, so cyclopropane is the choice since it allows abundant oxygen and does not act as a respiratory irritant.

Intravenous anesthesia has strong advocates in acute respiratory infections.

Heart Disease.—Cardiac cases may or may not be bad risks. A simple heart murmur, without symptoms of decompensation, dyspnea, cough, edema, or pain on exertion, with a normal electrocardiogram, should give no trouble under ordinary operative and anesthetic management. The risk involved is generally proportional to the degree of diminution in cardiac reserve, not to the loudness of the murmur found on examination as much as to the cardiac embarrassment produced in doing ordinary forms of exercise.

A cardiac patient who is well compensated usually tolerates a general anesthetic very well. Nitrous oxide oxygen should be avoided in car-

diacs because of associated hypoxia. Ethylene oxygen is somewhat better in this respect. Cyclopropane oxygen is ideal in the cardiac in some ways, but some authorities[13] claim that it increases the irritability of heart muscle, thereby increasing the tendency to ventricular fibrillation. Spinal anesthesia is contraindicated in hypertensive heart disease because the fall in blood pressure often accompanying spinal may be so great that circulatory embarrassment results. Ether anesthesia with its usual struggling upon induction and its toxicity to heart muscle is not the agent of choice though it may safely be used in many less severe cardiac cases or as supplement to one of the gases.

In the decompensated cardiac patient who requires surgery, regional block or local infiltration is by far the safest. Any form of general anesthesia in a decompensated patient carries with it grave risk.

Diabetes.—Hale and Tovell[14] consider acidosis one of the greatest dangers in anesthesia of the diabetic. Ether or chloroform when used to produce anesthesia cause an increase in the blood sugar which without a compensatory increase in insulin most certainly would cause acidosis. Therefore, most writers condemn these two agents for anesthesia in the diabetic.

Regional block anesthesia is a favorite method, but local infiltration of procaine hydrochloride is not so desirable because it may interfere with the healing of the wound in the diabetic patient.[15,16] Spinal anesthesia is an excellent agent, providing there are no contraindications such as a debilitated patient, or low blood pressure.

The hypoxia often associated with nitrous oxide anesthesia, and, to a lesser degree with ethylene anesthesia, which in turn increases the hydrogen ion concentration of the blood makes these gases undesirable in the diabetic. Cyclopropane oxygen because of its minimal effect on metabolism is an excellent drug for anesthesia in the diabetic patient.

Careful management, both preoperatively and postoperatively, is important. Bearing in mind the tendency of the diabetic patient to go into relative acidosis during anesthesia, the most suitable agent may be chosen.

Pregnancy.—The administration of the obstetrical anesthetic has not received the attention it deserves. Too often the responsibility for this important procedure is put into the hands of the inexperienced intern. It is not so much the type mixture of the anesthesia, but the skill and the capability of the anesthetist which makes for satisfactory obstetrical anesthesia.

The majority of surgical patients are properly premedicated while the opposite is true in the obstetrical patient, who not infrequently, is taken into the delivery room within a few hours after having eaten a full meal. The hazard of a general anesthetic in a patient with a full stomach has been discussed elsewhere in this paper. In others the analgesic drugs given the obstetrical patient make it imperative that the anesthetist understand the effects of analgesia.

Anesthesia is limited to the actual second stage of labor and repair after delivery. Chloroform is condemned by most authorities, but may have a place in the absence of other agents. It is 25 times more toxic than ether, but if not given for a long period of time probably does little cardiac and liver damage.

Ether is the safest drug in the hands of the inexperienced or untrained. It may be indicated if marked uterine relaxation is desired in an operative delivery (as for version). There is more bleeding in the third stage following its administration.

Nitrous oxide given with 15 per cent oxygen or greater is probably the most popular obstetrical anesthetic agent. If more than analgesia is desired with nitrous oxide, ether should be added to the anesthetic mixture rather than reduce oxygen, for with less oxygen the hazard of asphyxia both to mother and child is increased. High concentrations of nitrous oxide intermittently with the pains produce satisfactory analgesia in the second stage.

Ethylene oxygen allows for slightly more oxygen than does nitrous oxide, but has the disadvantage of being explosive.

Cyclopropane in obstetrics is ideal in the hands of a competent anesthetist. Abundant oxygen can be given with the gas and marked uterine relaxation can be obtained without fetal asphyxia. It is slightly less effective than nitrous oxide when given intermittently because the return to consciousness is slower. It, like ethylene, is combustible.

Other types of anesthesia such as local infiltration, spinal, sacral block, and intravenous have enthusiastic advocates, but are not widely used.

Of the inhalation anesthetic agents, cyclopro-

pane is the choice in cesarean section, for reasons just mentioned. Spinal anesthesia has been censured in cesarean secton, but is becoming more popular. It is contraindicated in toxemia, cardiac decompensation, and shock, from loss of blood as in placenta previa or abruptio placentae. In severe toxemias of pregnancy or cardiac decompensation, abdominal field block supplemented by light inhalation, if required, is the anesthetic of choice.

In summarizing, allow me to quote Ruth[17] in a recent editorial: "If humans were built to a stock pattern like motors so that they responded to physical agents in the fashion that engines do to fuel, administering anesthesia would be a simple and uninteresting business. . . .

"It follows, however, that it is the individual who is to be anesthetized, be he diabetic, anemic or toxic. The anesthetist who has an intimate, habitual, intuitive familiarity with the disturbances to be encountered, a familiarity won in the operating room, not in the library; and at the same time a scientific knowledge of these same disturbances; and, finally, possesses an effective way of applying these experiences and this knowledge, is equipped to practice successfully the art and science of anesthesiology."

Each anesthetic drug has a place in the armamentarium of the modern anesthetist. In individualized anesthesia the anesthetic agent or combination of agents best suited to the individual patient is chosen; thus allowing the best operating conditions for the surgeon and at the same time the greatest safety for the patient.

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DISCUSSION (*Abstract*)

Dr. Thomas C. Campbell, Clayton, Mo.—Nervous patients are very likely to complain under spinal or local anesthesia and where there are no contraindications, general anesthesia is to be preferred in these cases. A light gas anesthesia will often quiet the nervous patient enough to permit laparotomy, where spinal is indicated, or where complaints persist, in spite of an apparent "take" of the anesthesia. "Pentothal" sodium intravenously is sometimes used to supplement local or spinal anesthesia. The nervous patient will often wince and complain of pain when a needle is inserted for local infiltration, prior to lumbar puncture. These patients will often complain under spinal block.

Proper premedication and preparation of the patient from a psychological point of view is of importance in all anesthesia. The patient who is apprehensive when he arrives in the operating room will often experience an unsatisfactory anesthesia regardless of the type or method used. This is especially true in the emergency case. A few words of reassurance before and after the mask has been placed or spinal anesthesia given are helpful.

When the patient is young, general anesthesia is often the only kind indicated and in most of these, ether is to be preferred. Where there are to be a series of operations, as is sometimes true of orthopedic operations on young children, a nitrous oxide induction with a later switch to drop ether is often desirable; or the patient may be carried on a high percentage of oxygen with ether added to the mixture. This lessens apprehension at subsequent operations, as the memory of a relatively unpleasant ether induction does not remain.

For thoracoplasties or other work on tuberculous patients requiring a general anesthesia the gases are to be preferred. Nitrous oxide-oxygen anesthesia often produces cyanosis in these cases. The addition of small amounts of cyclopropane, from time to time, will permit administration of the much needed oxygen. A straight cyclopropane oxygen anesthesia may be required in some cases.

For operations in the lower portion of the body in elderly patients, spinal anesthesia is often quite satisfactory. This is especially true of prostatic work, or leg amputations. For work high in the abdomen where spinal block might cause considerable drop in blood pressure, many prefer general anesthesia. In poor risks or in elderly patients, where the procedure may be prolonged, work in the upper abdomen may be done under local anesthesia or intercostal nerve block supplemented by light gas anesthesia. The latter gives prolonged anesthesia with good relaxation and very little tendency toward shock.

All anesthesia should be individualized, and the anesthetic should be chosen to meet the need of the patient, the surgeon, and the circumstances.

BACTERIAL ALLERGY: OTOLARYNGOLOGICAL ASPECTS*

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All otolaryngologists should be able to recognize allergy. Therefore, it is taken for granted that all of us are familiar with intranasal pollen reactions or seasonal allergy; with perennial allergy or the non-seasonal type; with dermatitis due to contact with certain allergens; and also that we are well acquainted with patients demonstrating urticaria, angio-neuro-edema and often asthmatic bronchitis. We today are interested only in this latter group of diseases, the so-called bacterial allergic reactions.

Bacterial allergy, unfortunately, has received too little attention in medical discussions, as well as the literature. The average physician, and layman, think of allergy in terms of a pollen or food sensitivity. The effects produced by bacteria have been unrecognized, and thus; for example the anaphylactic intranasal reaction of paranasal sinus infection is too frequently diagnosed and treated as pollen allergy. The otolaryngologist confuses the diagnosis and the allergist also will miss the diagnosis unless autogenous vaccine made from the nasal secretions is included in his repertoire of skin tests. The skin tests to the inhalants, such as pollens, epidermals, together with food allergens, will invariably be negative in a case of pure bacterial allergy.

Allergy presents a very complex condition. Knowledge of bacteriology, immunology and of biochemical factors in the blood, various body tissues and secretions, is necessary to understand the fundamentals of allergy. This is a too specialized field for the average otolaryngologist. Of necessity he consults the allergist. The actual treatment of the patient requires the skill of both the allergist and the otolaryngologist. An example of such united efforts occurs in that patient with a badly deviated nasal septum who also has severe pollen fever. We know that allergic rhinitis occurs almost entirely in the individual who has impaired nasal ventilation and drainage, rarely occurring in the individual with excellent nasal breathing spaces. The treatment of such patients demands the provision of ventilation and drainage by surgical intervention in conjunction with desensitization of the patient to allergens to which he reacts.

Definition.—In allergy one finds sensitivity to various pollens, epidermals, food, dust and other allergens which are mainly extrinsic, that is, borne into the body by respiration, ingestion of food or by simple contact. In addition, there are allergic reactions due to intrinsic allergens which may be of metabolic, endocrine or other such varied origins. Bacterial allergy is of intrinsic origin and is solely the reaction of sensitivity to the toxins of bacteria, viruses, or fungi, which are liberated in the human body by an infectious process.

Incidence.—The ratio of bacterial allergy in relation to the total number of allergic patients is not known. But, judging purely by guess, some 15 to 20 per cent of the total number of allergic patients have uncomplicated bacterial allergy. The most common finding is a combined allergy of intrinsic and extrinsic factors, such as occurs in the chronic sinusitis of myxomatous type. It is known that polyps are infiltrated with bacteria, and the sinus will continue infected until the polypoid mucosa is completely removed.

The manifestations of bacterial allergy may occur over the entire body, as is found in urticaria and eczema. Infected cysts in the paranasal sinuses are commonly the cause of both of these conditions.

There is marked absence of bacterial allergy in the colored race. The explanation for this seems to lie in the fact that the colored race is very infrequently subject to paranasal sinus infections. This undoubtedly is due to the large nares with excellent provision for ventilation and drainage that is common in the negro race.

There seems to be no definite age limit for bacterial allergy; and if one will glance over the records of his patients, he undoubtedly will find infants and even the most mature and elderly people among them.

Bacteriology.—The most virulent and the relatively non-virulent organisms may produce equally severe allergic symptoms. There is a tendency, however, for the beta hemolytic streptococcus to cause more often the severest reactions. Cultures obtained from the infections may show any of the strains of streptococci or staphylococci in predominance, hemolytic or non-hemolytic, with occasional finding of pneumococcus, influenza bacillus, diphtheroids and

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other numerous and varied organisms of the upper respiratory tract, such as pharyngis sicca, and micrococcus catarrhalis. Anaerobic organisms are almost invariably found. Fungus and fusospirochetal infections are less often seen.

Symptoms.—The symptoms of bacterial allergy vary considerably. There are certain types of infection that seem to produce similar symptoms in various individuals. For instance, infected cysts of the maxillary sinus are notorious as producers of urticaria. The more common manifestations of bacterial allergy are asthmatic bronchitis, allergic rhinitis, angio-neuro-edema, disseminated eczema and urticaria. There are numerous other minor manifestations, such as headache and neuralgia. Acute infections will ordinarily produce much more severe symptoms than chronic infections, although the organisms may be the same. Some patients may have bacterial sensitivity for many years while the organisms may become relatively non-virulent. The chronic type of infection is often more difficult to diagnose and locate because it may be very small, as occurs in a dental abscess. The differential diagnosis of bacterial and non-bacterial allergy may seem difficult since the lesions may be similar in appearance; but the history of seasonal, perennial or bacterial origin, together with the sensitivity tests, differentiates the causative factors. For instance, the individual having angio-neuro-edema and having eaten shell fish the night before need not be tested primarily for bacterial reactions.

Diagnosis.—The otolaryngologist is the one diagnostician who eventually must and usually does find the infection in bacterial allergy. The postnasal drip of infected material into the trachea may be completely overlooked by the allergist or general internist because he has not seen the discharge in the various nasal meati at the point of exit from the paranasal sinuses. It is essential that the nasopharyngoscope be used in all patients in an effort to determine whether there is any polypoid tissue or discharge in the various nasal meati. Such inspection is not possible by use of the head mirror and nasal speculum. The otolaryngologist is not infallible and he should never accept a negative examination on his part as final. He should call on other available facilities. The allergist should always be called in consultation. Roentgenograms only too often reveal a cyst in the maxillary sinus which had never been suspected on transillumination of that sinus. Dental x-rays also may reveal an unsuspected abscessed tooth, the dental nerve being devitalized and causing the patient no symptoms. There are some who prefer to examine smears of nasal secretions, which will give certain information. Nasal cultures, especially from the middle meati, are essential because the offending organisms may be cultured and vaccine prepared from the cultures obtained. The patient should always be skin-tested to his own intrinsic infection before actual vaccine therapy is begun. One is surprised at the frequency with which the patient reveals violent reactions to the desensitizing mixture made from his own nasal secretions.

There are occasions when the culture is taken from the pharynx or tonsils if the latter are present. These occasions arise when the paranasal sinuses are found to be free of infection and there is definite hypertrophy with infection of the lymphoid tissue on the posterior or lateral wall of the pharynx or at the base of the tongue. Occasionally a reddened, granular - looking pharynx is noted without follicular hypertrophy. The tonsils themselves may be harboring the infection. Gentle pressure on the tonsils may reveal an abscess in the tonsil, and a search of the crypts may reveal decomposing food. The adenoids may be abscessed or contain an infected cyst, even a Thornwaldt's bursa; and thus it is repeated: the nasopharyngoscopic examination is always absolutely necessary for a thorough examination.

Allergic patients usually have a low blood calcium, and the blood calcium determination should always be included in their study. If one chooses, as mentioned previously, to make smears of secretions in allergic diseases, he will find an increase of eosinophils. This is usually more marked than in allergy of extrinsic or mixed type. One of the most recent, and undoubtedly the most accurate, differential diagnostic procedures is the Weltmann test. This simple test on the blood serum in unfailing repetition will demonstrate to the examiner whether the patient is suffering from bacterial allergy or non-bacterial allergy, and is a valuable adjunct to the sedimentation rate test commonly used in determining whether symptoms are of infectious origin.

Treatment.—There is only one method of treatment of bacterial allergy and that is to remove the infection. It is also usually desirable that a vaccine be prepared from the cultures obtained at the time of removal of the infection. As mentioned previously, infected cysts of the maxillary sinus are frequently the cause of urti-

caria. A puncture of the cyst with a trocar with release of the fluid may alleviate symptoms temporarily and does provide a method of collecting material for the vaccine, but it does not prevent refilling of the cyst with recurrent symptoms. Complete surgical removal of the cyst is imperative. The extraction of abscessed teeth and the removal of infected tonsils and adenoids may be necessary. It is further desirable in some cases where improper ventilation is found intranasally to straighten the nasal septum to prevent the harboring of organisms in the nose, especially the anaerobic organisms. One may reasonably consider this a radical procedure, but after all, it is the simplest method of eradicating germs which thrive in the upper respiratory tract. Roentgen ray therapy on the lymphoid tissue of the pharynx and nasopharynx may be indicated. About 1,000 roentgen units are used, divided into 200-unit doses at weekly or ten-day intervals. A unit dispensing at least 200 kilovolts produce the best results. Large follicles of lymphoid tissue should be removed surgically or by electro-coagulation previous to the roentgen ray therapy.

Vaccines are essential in allergy because they arm the patient against possible future infection by the same organism. The skin testing of the patient to the vaccine is also essential in that it will demonstrate how strong a dilution of vaccine should be administered for desensitization. The oral administration of high-vitamin-containing foods and medications, such as cod liver oil and tomato juice, is beneficial. The oral administration of calcium gluconate or other calcium compounds, (or in acute distress with edema, intravenous calcium gluconate), is necessary in patients with bacterial allergy. More recently potassium combinations have also been found helpful in allergic therapy.

The treatment of paranasal sinus disease when it is the cause of allergic symptoms demands the thorough cleaning out of the diseased sinus or sinuses. This procedure will not permit the so-called antrum window operation because the diseased lining membrane still persists in the antrum following that operation. It is to be admitted that the antrum has good drainage, but the germs and toxins are still being produced throughout the thickness of the diseased tissue, and symptoms of bacterial allergy persist as long as the toxins are still being produced. The Caldwell-Luc, so-called radical, operation does remove all the diseased tissue and allows a new healthy, but admittedly not entirely normal, mucosa to reline the sinus, and healing occurs because adequate drainage has been provided.

TYPES OF CASES OF BACTERIAL ALLERGY

Case 1.—O. S., a single white man, aged 60, was seen on March 15, 1933. For twenty years he had typical symptoms of pan-sinusitis. For the previous five years there had been a peculiar condition of the skin over the entire body, the appearance being that of wheat-bran sticking to a moist skin, which actually was dry. On March 16 and 17, 1933, the ethmoids and sphenoids were thoroughly cleaned out and a bilateral Caldwell-Luc radical antrum operation was done. At the same time, naso-frontal ducts were enlarged and the frontal sinuses irrigated. There was immediate improvement of the patient's skin condition. Staphylococcus aureus was the infecting organism and vaccine was prepared. He was seen frequently throughout a period of six months and again three years later. There had been no recurrence of the eczema. He was then 63 years old and considering matrimony, now that his skin was no longer repulsive to a prospective bride.

Case 2.—H. F., a single white man, aged 36, had never exhibited symptoms of allergy but had repeated upper respiratory infections, which were thought due to a cyst in the left maxillary sinus. On June 9, 1939, a Caldwell-Luc radical antrum operation was done to remove the cyst, which was found to contain alpha hemolytic streptococci. The operation was very easily and simply done, but the next day the patient's lips and peri-orbital tissues, bilaterally, were so edematous that he was unrecognizable. Intravenous calcium gluconate and sulfathiazole were administered. At the end of two days the swelling had disappeared. He was given vaccine and within three weeks the intradermal tests were negative. This demonstrates a case of angio-neuro-edema stimulated by the stirring up of infection by a surgical procedure.

Case 3.—W. N., a married white man, aged 34, was seen on January 19, 1939, with a history of severe urticaria throughout his life. A thorough diagnostic check-up on this patient revealed only chronically diseased tonsils and it was thought necessary to remove them with vaccine preparation. Cultures obtained from the biliary and intestinal tracts showed non-pathogenic organisms. Two days later under light ether anesthesia, and with the use of the Davis mouth gag, tonsillectomy was done. As soon as the gag was inserted into the mouth a cyst about 2¼ cm. in diameter was noted on the anterior wall of the epiglottis (*Fig. 1*). The cyst ruptured just before it was removed *in toto*. Cultures of the cystic fluid revealed beta hemolytic streptococci, alpha hemolytic streptococci, and an anaerobic mixture. The tonsils showed the same organisms and several other non-pathogenic ones. Vaccine was prepared from both infections.

It might be stated that the reason the cyst had been missed on the original laryngeal examination with a mirror was that the tip of the epiglottis turned sharply forward and to a great extent obscured the cyst, and only after elevation of the tongue, down to the cyst, by the tongue blade, did it become visible.

There was an immediate flare-up of the urticaria following the removal of the infected epiglottic cyst and tonsillectomy, but this subsided in a few days, and

the patient is yet supposedly perfectly free of urticaria. This is a report of an infected epiglottic cyst and tonsils causing urticarial symptoms for more than thirty years, since infancy, and complete relief of symptoms on removal of the infection.

Case 4.—H. M., a married white woman, aged 37, was seen on May 1, 1931, with a complaint of deafness, which was diagnosed as otosclerosis. There were numerous members of her family, both distant and close, with the same disease. She was seen again one year later with a main complaint of obstructed nose and profuse watery nasal discharge. The nasal mucosa had a rather typical appearance of allergy. She was tested for various extrinsic allergens but found sensitive only to orris root. A chronic maxillary sinus infection was then suspected and roentgenograms demonstrated myxomatous lining membrane in both maxillary sinuses. She then developed a mild bronchitis. It was thought advisable, in order to prevent onset of asthmatic symptoms, to do a complete bilateral exenteration of the ethmoid and maxillary sinuses. A submucous resection of the nasal septum was also done to provide proper ventilation and drainage. The culture from the sinuses showed a heavy growth of streptococcus viridans and various staphylococci, and a vaccine was prepared. Up to the present time there has been no recurrence whatever of bacterial allergic symptoms. However, by 1936 she had developed mild symptoms of extrinsic allergic rhinitis, mainly to the pollens of various plants, which was entirely seasonal.

This demonstrates a case of bacterial allergy with a minimal amount of extrinsic allergy originally, showing, after a period of five years of continued freedom of bacterial allergy, a slight increase of seasonal pollen allergy.

Case 5.—A. C., a married white man, aged 33, had itching rash and wheezing cough for six weeks. He was seen on May 10, 1937. The itching rash later proved to be periarteritis nodosa. The lesions extended all over the body. The maxillary sinuses were washed out several times in 1937. No organisms could be cultured from the washings, and, therefore, no vaccine was prepared. On April 24, 1941, he returned with all the skin lesions much worse. They had been present ever since he was originally seen, four years previously. Roentgenograms showed a minimal amount of sinus infection, but in view of the severe skin lesions he had exhibited, it was thought advisable to clean out the sinuses and remove the tonsils and adenoids. These operations were completed on May 6, 1941. Staphylococcus albus was cultured from the sinuses. The tonsils showed alpha hemolytic streptococci, pharyngis sicca, and M. catarrhalis. Vaccine was prepared. He was seen on June 11, 1941, and the skin appeared normal in every respect.

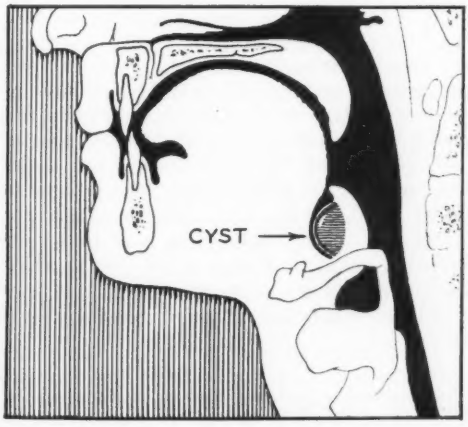

Fig. 1

Diagrammatic sketch of infected epiglottic cyst (*Case 3*). Tip of epiglottis pointed anteriorly obscuring vision of cyst with mirror and it came into view on use of Davis mouth gag during tonsillectomy which elevated the tongue down to the cyst.

This case demonstrates a different and odd type of skin lesion which appeared solely as a result of chronic infection in the upper respiratory tract.

Case 6.—K. T., a college boy, aged 18, had urticaria for a period of approximately eight weeks. The urticaria followed an acute sphenoid and ethmoid infection, which was superimposed on a chronic infection, also involving the maxillary sinuses. Operations for the thorough cleaning out of the ethmoid, sphenoid and maxillary sinuses were performed. Staphylococcus albus and alpha hemolytic streptococci were the infecting organisms. He had typical marked edema of the soft tissues of the face following the operation, which was controlled by intravenous calcium. The urticaria immediately began to improve. He was seen on several occasions up to several months later, and when last seen he was free of urticaria.

This demonstrates bacterial allergy in which an acute exacerbation of a chronic sinus infection precipitated allergic manifestations, while the chronic infection had never produced such symptoms.

Case 7.—R. C., a married white man, aged 45, had a submucous resection of the nasal septum on March 19, 1939. On the day following removal of packs, swelling and pallor occurred in the nose, involving the septal membranes as well as the turbinates. Due to the fact that the patient lived in a pine grove and the pine cones were full of pollen at that time, it was throught he was having a reaction to pollens. In addition, he began using numerous types of intranasal medications, all against advice, in an effort to obtain breathing space. Later it was discovered that he had a hematoma of the nasal septum posteriorly which had become infected, producing all of the intranasal symptoms. As soon as the hematoma subsided the allergic symptoms disappeared.

This case demonstrates local intranasal allergy of bacterial type.

Results.—It is to be noted from the foregoing case records, that bacterial allergy has demanded surgical intervention, and it is to be stressed that

surgery alone, or surgery combined with vaccine, can produce desirable results. It may be stated without hesitation that uniformly good results are obtained by the elimination of infections which have produced allergic reactions. Vaccine, prepared from cultures of infections which have been explored and removed, is very essential.

SUMMARY

An attempt has been made to demonstrate the frequency of allergic symptoms due to bacterial toxins rather than ordinary pollen, inhalant or other allergens. The bacterial allergy field is extremely large and the study of each case requires more facilities than the otolaryngologist alone can provide. The best results are obtained in those cases where the allergist and the otolaryngologist combine their resources. The symptoms of bacterial allergy resemble other types of allergy and one must depend upon the history and certain laboratory studies, especially skin tests, roentgenograms of the sinuses and teeth, and blood serum studies, such as the Weltmann and sedimentation tests, which in themselves reveal bacterial infections. Other blood studies, such as cell counts, differentials, and the blood calcium tests, give additional information. But bacterial allergy, after all, is proved only after skin tests to all types of extrinsic allergens have given no reactions and, conversely, autogenous vaccine has produced very definite reactions. It is again worthy of mention that complete eradication of the infection is necessary to obtain good results in bacterial allergy, and vaccines are of additional benefit.

DISCUSSION (*Abstract*)

Dr. Edley H. Jones, Vicksburg, Miss.—Dr. Eagle mentioned the advisability of skin tests when using stock vaccines. My attention was called to this by Dr. John P. Henry, of Memphis, in discussing a case that had bronchial asthma, had had a bronchoscopy, at which time a specimen had been collected, and an autogenous vaccine made, and administered without any apparent benefit. Shortly afterwards, in the course of routine diagnostic testing, tests were made with stock vaccines; and he was given the one to which he reacted best, with notably good results.

As a result of this conversation and our experience for some years we have made it a practice routinely to test patients before giving vaccines. We make these tests in the usual manner, injecting 0.05 c. c. of the vaccine intradermally. We use a selection of 5 stock catarrhal and 1 stock streptococcus vaccine, reading the results of the test at the end of 24 hours. We administer the vaccine which has the greatest reaction in proportion to its bacterial content. If we have very little reaction we do not advise any injections. If good reactions are obtained, good results are usually obtained. Since we have adopted this procedure we have had far better results with catarrhal vaccines, and are sold on the idea.

Dr. Eagle (closing).—Many of us use iodoform packs following sinus surgery. In our experience, iodoform causes tremendous edema of the mucosa in the allergic patient, whether bacterial in origin or not. For the past two years we have discontinued the use of iodoform with most satisfactory results.

OCCUPATIONAL, SEASONAL HAY FEVER AND ASTHMA DUE TO NARCISSUS BULBS*

By VINCENT J. DERBES, M.D.†
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The narcissus is a member of the Amaryllidaceae which includes 90 genera, yielding, in addition to numerous flowering bulbs, valuable fiber as henequen, pita and sisal hemp.[1] The name is probably derived from the Greek narke, stupor, rather than the legendary egoist, for it has been reported that ingestion of thirty to forty grains of the bulb has produced alarming symptoms (Walsh).[2] The family is closely related to the Liliaceae which includes the onion, garlic and asparagus and to the Iridaceae which embraces the iris and gladiolus. Narcissi are popular spring flowering bulbous plants including the daffodil, campernelle, jonquil, polyanth and Chinese sacred lily (Bailey and Bailey).[3]

Vast numbers of narcissi are raised in the Scilly Islands and a contact dermatitis, "lily rash," is very common there.[2] This condition has been reported in this country by Stryker[4] and appears to be closely allied to "tulip fingers," described by Caulfeild,[5] Rappaport and Welker,[6] and others. The degree of exposure may be realized when we learn from Walsh that most expert pickers have been known to gather 2,000 bunches of 12 blooms each in the course of a single day. The case to be described is unique in that it is the first in which allergic respiratory symptoms have been produced by inhalation of dried narcissus bulb substance.‡

*Read in Section on Allergy, Southern Medical Association, Thirty-Fifth Annual Meeting, St. Louis, Missouri, November 10-13, 1941.

†From the Vaughan Graham Clinic, Richmond, Virginia.

‡Several years ago a patient presented himself at this clinic with a history of asthma from handling gladiolus bulbs but no confirmatory studies were made at that time.

CASE REPORT

Mr. T. D. S., aged 27 years, native of Florida, a narcissus bulb farmer by trade, has had seasonal asthma and hay fever from June 1 to December 1 for the past ten years. He has been in his present occupation for the past twelve years. He plants 500 acres of narcissus bulbs and says that it is the dust from the bulbs that causes his symptoms. Leaving the farm when he is having an attack of asthma gives him prompt relief. Narcissus pollen has no effect on him. About 125,000 narcissus flowers a day are sold and he is thus exposed to massive quantities of pollen at the time they are cut for shipping, but he is symptom-free at that time. When handling the bulbs he has pruritus of the hands, face and neck or other exposed parts of the body where the dust lodges, but he does not have frank eczema nor urticaria. There is no familial allergic history.

There was nothing noteworthy on physical examination. Routine laboratory studies were negative with the exception of a five per cent blood eosinophilia.

The outstanding allergic finding was markedly positive endermal reactions to extracts of narcissus peel and bulb, whereas skin tests to narcissus pollen were negative. These extracts, containing 0.01 mg. nitrogen per c. c. were nonirritant as shown by negative reactions in ten control subjects. The reaction was so strong that an attack of asthma supervened within ten minutes of testing, although he had had no asthma for four and one-half months. When 0.5 c. c. of epinephrine 1.1000 was given subcutaneously sputum was brought up and a Wright stain of a smear made therefrom was found to contain 27 per cent of eosinophils. There was an intense local reaction for hours. Certain other of his reactions were of interest. He gave positive tests to orris root, asparagus, garlic and onion, all related botanically. Negative reactions were obtained to grass and ragweed pollens both by skin and conjunctival tests. Passive transfer was positive.

DISCUSSION

There are several interesting features to this case. Thus the time required for sensitization (2 years) parallels closely the time required for the establishment of sensitivity to sugar beet pollen reported by Phillips.[7] Again, the cross reactions to orris root, garlic and other botanical kin and the negative response to narcissus pollen finds its counterpart in the work of Farmer,[8] who demonstrated in grass pollen sensitized cases that there was no immunologic relationship between the pollens and seeds of the same grass, although there were numerous cross reactions to other grass pollens. Skin sensitizing antibodies are generally lacking in "tulip fingers" (Rappaport and Welker, Caulfeild), but were present in this case. This, of course, is not dissimilar to the condition obtaining in dermatitis and hay fever caused by ragweed.

SUMMARY

The first case of seasonal asthma and hay fever due to inhalation of dried narcissus bulbs is reported.

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DISCUSSION (*Abstract*)

Dr. Warren T. Vaughan, Richmond, Va.—We started this patient with aqueous extracts of narcissus bulb, ran him up to a fairly concentrated extract, and he obtained about fifty per cent relief this year. We are continuing with perennial treatment and hope to improve the results next year. It would have been difficult to get much more than fifty per cent because of the continued heavy exposure, but the results were definitely better than he has had in previous years.

One additional observation is of some interest. He had a colitis and had been told that it was probably allergic. We found an amebic infection, which brings home the fact that a person who is suffering from allergy may have other equally important non-allergic diseases.

Dr. Ralph Bowen, Houston, Tex.—This case clearly emphasizes the need for considering our occupational inhalants and exposures.

Recently I saw a woman who said she had hay fever. From this history you would think she might be a ragweed case, but I discovered that she wore two different types of cosmetics, one in the summer and one in the fall. She gave a 44 reaction to orris root, and it was this fall cosmetic she was wearing which explained her hay fever, another case of a ground-up, powdered root explaining a nasal allergy. Wrinkle has reported three cases of allergy to spirea.

In Texas we have a lot of trouble from cottonseed. The linters give off dust that causes nasal allergy.

Texas children perspire excessively, and the perspiration will throw the pollen into solution. We have all kinds of trouble which many people consider just heat rash, but which really are pollen sensitivity.

Dr. Derbes (closing).—The history is of very great value in allergic cases, often of much more value than numerous tests.

THE DIFFERENTIATION OF BRONCHIAL ASTHMA FROM SIGHING DYSPNEA AND CARDIAC ASTHMA*

By W. H. Browning, M.D.
Shreveport, Louisiana

We, as allergists, are often confronted with the problem of differentiating bronchial asthma from other forms of dyspnea. In most instances this problem is not difficult, but because of its simplicity and because of the prominent signs and symptoms of bronchial asthma, we are likely to make this diagnosis without adequate study of the patient.[1] We seem to forget that the same prominent signs and symptoms may be produced by conditions other than bronchial asthma. We often repeat, but sometimes fail to heed, the axiom "All that wheezes is not bronchial asthma". Some of us have gone further. We have diagnosed as bronchial asthma, dyspnea in which there is no wheezing. Such an error is obviously due to inadequate history, careless examination and possibly too much reliance on the referring physician's diagnosis.

It is the purpose of this paper to call attention to two conditions, one without wheezing, the other with wheezing, which are sometimes confused with bronchial asthma. These conditions are sighing dyspnea and cardiac asthma. Methods of differentiating these conditions from bronchial asthma will be discussed in some detail.

SIGHING DYSPNEA

The syndrome of sighing dyspnea was first described by Maytum[2] in 1938. His description I consider a classic, and no attempt is being made to add to it, but I am taking much of my material from his article in order to call attention to this syndrome.

Sighing dyspnea may be defined as a neurosis of functional origin characterized by deep, sighing respirations in which the accessory muscles of respiration are brought into play and the respiration is greatly increased in depth without much change in the respiratory rate.

As pointed out by Maytum,[2] sighing is a normal response to fatigue or mild emotional states such as grief, sorrow, worry or shock, yet under proper environment it may assume clinical importance. Mental stress, nervousness or emotional strain cause rapid, shallow breathing which in turn causes nervous irritability, fatigue and an oxygen deficiency of the respiratory center. According to Haldane,[3] anoxemia and fatigue of the respiratory center produce "A feeling of inability to expand the chest to breathe just as if it were mechanically constructed".

The course of events, in most cases, is that the patient is under some mental or emotional stress which causes shallow respiration and this produces an oxygen deficiency of the respiratory center. To compensate for this deficiency, the patient begins sighing. After a series of sighs, the involuntary nervous reaction may voluntarily disappear, allowing the body adequate oxygen intake and therefore dispensing with the sighing. On the other hand, should the nervous reaction not subside, the patient's attention is soon attracted to his breathing and he becomes aware that something is wrong. The syndrome is now developed.

The attacks occur more frequently in women than in men and they occur more often during the day than at night, but I am of the opinion that the allergist will see more cases that are having their attacks at night because if a patient is awakened from a sound sleep with one of these attacks, he naturally becomes excited, calls his physician and quite often an erroneous diagnosis of bronchial asthma is made. When you see this patient the next day and he describes his attack to you, it may be very difficult to say that the patient did not have bronchial asthma because quite often these patients will tell you that they had wheezing. After you follow them further, you find that they really do not know what is meant by wheezing. They may consider long, loud inspirations as a form of wheezing.

The typical attack, according to Maytum[2] and confirmed in my experience:

> "Consists of a series of deep, sighing respirations which are greatly increased in depth without much alteration in the respiratory rate. The shoulders are elevated with each inspiration and the accessory muscles of respiration are brought into action much the same as in an asthmatic attack. The facial expression displays anxiety and distress, and the patients often put one or both hands to the thorax. It is not uncommon for the patient to run to a window or even out of doors in an attempt to get sufficient air."

The patient appears to be acutely ill. If the attack is long and severe, tetany may occur from hyperventilation with the loss of excessive amounts of carbon dioxide. Paresthesia of the extremities is common. Many patients experience the sensation of impending death.

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*Read in Section on Allergy, Southern Medical Association, Thirty-Fifth Annual Meeting, St. Louis, Missouri, November 10-13, 1941.

To differentiate such an attack, as just described, from bronchial asthma is no easy problem and the only method of making a correct differentiation is by means of the history. One should question the patient in detail concerning wheezing and it is often necessary to explain to the patient just what is meant by wheezing. However, during the course of taking the history the patient will often take a deep, sighing inspiration because most of them are under some nervous tension at the time of the examination. This should give one a clue as to the diagnosis but if it does not, the patient will usually use some stereotyped phrases[2] which are so characteristic that they are, in themselves, diagnostic of sighing dyspnea. These phrases are: "I just can't get a deep breath" or, with the hands about the level of the second ribs anteriorly will say: "I just breathe below this" or "I just can't get a satisfying breath" or "Something prevents air from going to the bottom of my lungs" or "Something seems to press on my chest". After a patient has given you a lead such as this, it is usually a simple matter then to determine definitely that he does not have bronchial asthma. As a rule, the physical examination is entirely negative. I have seen several patients who had nocturnal sighing dyspnea over a rather long period of time and who, in their histories, said that they had been relieved repeatedly by the use of epinephrine. I presume that the psychic effect of the arrival of the physician in charge had given the patient confidence and thus relief.

Sighing dyspnea is a functional disorder and is not caused by organic disease. It may coexist with organic disease, but the underlying cause of this disturbance is always a nervous disorder and the treatment of the condition is the treatment of the underlying nervous disorder.

CARDIAC ASTHMA

Cardiac asthma is the result of left ventricular failure. However, not all cases of left ventricular failure result in cardiac asthma. Rackemann[4] first advanced the theory that cardiac asthma is the result of heart failure in an allergic individual or in one potentially allergic. Swineford,[5] after extensive studies, has reached approximately the same conclusion. He is of the opinion that the cardiac failure has thrown the patient out of allergic balance and I must add that his studies are very convincing and afford an excellent explanation of why some patients with left ventricular failure have asthmatic symptoms whereas others do not.

The exact pathogenesis of cardiac asthma is not known. Presumably, left ventricular failure occurs, causing edema of the lungs. This edema is different from edema in other parts of the body in that a large part of the fluid is outside the physiologic body in the alveolar lumen. This edema is supposed to occur quickly. A reflex spasm of the bronchioles is produced and we have the typical symptoms of bronchial asthma.[6 7 8]

It is important in the treatment of the patient that we know the cause of the asthma. Even though we assume that cardiac asthma is nothing more than heart failure in an allergic individual, it is still necessary to know that cardiac failure is the underlying cause. Epinephrine is almost a specific for bronchial asthma, but may be quite detrimental to the heart in a patient with cardiac asthma. Morphine is almost a specific for a patient with cardiac asthma, but this drug may be quite harmful to a patient with a typical attack of bronchial asthma. In such cases where ordinary means of differential diagnosis fail us, circulation time tests are invaluable.[6 9-15] Only two tests are essential and they are relatively simple.

CIRCULATION TIME TESTS

The first is known as "Arm to Lung Time". For this test there are two methods available, the ether time test and the paraldehyde time test. The ether time test, as developed by Hitzig,[11] is the method of choice inasmuch as Hussey and Katz[16] have shown the unreliability of the paraldehyde time test in patients with heart failure.

Technic.—The patient is allowed bed rest for at least one-half hour before the test. When the test is begun, the arm is placed in such a position that the antecubital vein and the heart are on an approximate level. The needle is inserted and allowed to remain in position for 30 seconds to 1 minute after removal of the tourniquet before injection is begun. Then, very rapidly, inject 0.3 c. c. of ether mixed with 0.3 c. c. of physiologic saline. With a stop watch, measure the time that elapses from the beginning of the injection until ether is smelled on the breath. Both the patient and the assistant can check on this. The patient should be instructed to say "Yes" the moment he smells the ether; but ordinarily he will cough or change his facial expression as soon as the ether is smelled. At the same

time the operator can smell the ether on the patient's breath. Normal is 3.5 to 8 seconds.

The second test is known as "Arm to Tongue Time". For this, many substances have been used, the most common being sodium cyanide,[6] calcium gluconate,[13] decholin,[17] saccharin,[12] lobeline,[18 19] and magnesium sulfate.[15] Golden and Brams[20] and Bernstein and Simkins[15] have reported harmful results from the use of calcium gluconate with patients who had taken digitalis. Decholin is contraindicated because sensitivity to it is not infrequent[21] and because it tends to produce shock unless injected slowly. Macy[22] reports one death following its use. Saccharin may produce thrombosis of the injected vein and is painful to the patient if tissue infiltration occurs. Leinoff[23] reports one death following the use of saccharin and ether, and Hitzig[11] advises that these two tests should not be made in the same arm. The magnesium sulfate test as developed by Bernstein and Simkins[15] in this country seems to be the most satisfactory test to use as the end-point is extremely sharp and untoward reactions are rare.

Technic.—The test is performed under the same conditions as given in the previous test. Inject 6 c. c. of 10 per cent magnesium sulfate rapidly. Time is measured from the beginning of the injection until the patient experiences a burning sensation in the posterior pharynx. Normal is 9 to 16 seconds.

After performing these two tests, the last step is to calculate the "Lung to Tongue Time". This is done by subtracting the ether time from the magnesium sulfate time. Normal is 5 to 10 seconds. In cardiac asthma the "Lung to Tongue Time" is definitely increased, whereas in bronchial asthma this time is normal or decreased.

A new method, whereby the "Lung to Tongue Time" is measured directly by having the patient exhale forcibly and then inhale two breaths of 50 per cent carbon dioxide, the end-point being a sensation of warmth passing over the head, has been reported by Gubner, Schnur and Crawford.[24] Normal is 5 to 10 seconds. In this direct method, as in the indirect method, the time is increased in cardiac asthma and is normal or decreased in bronchial asthma.

I have tried this method on a number of normal individuals and I find that the end-point is too indefinite to be of much value when used on critically ill patients.

SUMMARY

(1) Cardiac asthma and sighing dyspnea may be easily confused with bronchial asthma.

(2) Sighing dyspnea is diagnosed between attacks by the tendency of the patient to sigh frequently and by noting the use of stereotyped phrases to describe his symptoms and is diagnosed during an attack by the continued absence of wheezing.

(3) Circulation time tests, necessary for the differential diagnosis of cardiac asthma and bronchial asthma, are described.

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DISCUSSION (*Abstract*)

Dr. Homer E. Prince, Houston, Tex.—I can remember two cases of sighing dyspnea, each of which occurred in individuals who had other allergies. The first was a young man who had an unmistakable hay fever and a rather advanced sighing dyspnea. He was not concerned about his hay fever because it did not bother him, but he wondered if allergy management would take care of the other condition. Fortunately perhaps for both of us he was not encouraged to become a patient. The other case was a child about four years of age who has an asthma satisfactorily treated. His mother called my attention not long ago to the fact that he was breathing in a peculiar manner that did not resemble his previous attacks of asthma. Sure enough, he accommodated us with a typical demonstration of the breathing Dr. Browning has described when the matter was mentioned. Instructions to his mother to pay no attention successfully took care of the situation for this child.

Any asthmatic, particularly past the middle decades of life, may present a confusing condition, and if the possibility of existing cardiac disease is not appreciated, treatment may accomplish little or even be detrimental if valuable time is allowed to elapse before institution of proper cardiac therapy. Electrocardiographic studies on these patients are frequently inconclusive, and it may remain for a period of rest or differential therapy to show the actual importance of true asthma or of cardiac disease. If wider use of technic such as those outlined here by Dr. Browning could be employed, some confusion and time might be saved.

I was interested in Dr. Browning's remark that morphine is indicated in cardiac asthma. I would like to ask him whether he reserves morphine for the patient who has asthmatic symptoms as a result of cardiac disease only, or whether he feels that the patient with cardiac disease who has definite allergic asthma precipitated by his heart disease is also the type who should receive morphine.

Dr. Hal M. Davison, Atlanta, Ga.—Most cases that have been referred to me for asthma, which are sufferers from other conditions than asthma, may be classified as follows: (1) pulmonary fibrosis, (2) emphysema and (3) cardiac decompensation. However, occasionally a patient with sighing dyspnea, with or without other allergic manifestations, does come for examination with the belief that he is suffering from bronchial asthma. Most patients with sighing dyspnea fear heart disease, lung disease, enlargement of the thyroid gland, or tumors. In any case, of course, the proper diagnosis must be made.

Early in practice I became greatly interested in the care of patients with neuroses and I have treated a relatively large number. A greater percentage of these patients experience the sensation that produces this type of respiration.

It harms a neurotic patient for a physician to tell him anything about himself that cannot be either proven or demonstrated, if not actually, at least by inferential and logical means.

It appears that sighing dyspnea has a neurotic basis and no one has ever demonstrated any other cause. The explanation that I give to my patients is different from the one suggested by Maytum and by Haldane. In explaining the mechanism of the production of their symptoms to neurotic patients I attempt to demonstrate the counterpart of these symptoms in a so-called normal individual. Any person may experience the beginning of this sighing type of respiration when startled or suddenly frightened, but the element of suddenness is involved. It is not inconceivable that, if the fright be great enough, the reaction, manifested externally by sighing dyspnea, may produce a conditioned reflex and through this mechanism be reproduced later while the patient is either awake or asleep.

All the cases of cardiac asthma that I have personally observed have occurred in patients with recognized heart disease sufficiently advanced to obviate any doubt of its existence. Before I had the privilege of hearing Dr. Swineford's paper, I had considered the accompanying asthma as part of the cardiac symptomatology. He convinced me that at least a greater percentage, if not all, of cases with cardiac asthma had an allergic causation of their wheezing, with cardiac decompensation as the trigger element. Kern and others have reported cases of cardiac asthma unrelieved of their symptoms until they were separated from the offending allergens. Since my enlightenment, every case of cardiac asthma that I have seen, has speedily recovered from treatment for cardiac decompensation or as speedily ceased to need treatment for other reasons.

Fortunately, treating cardiac decompensation and thereby relieving the trigger element stops nearly all cardiac asthma.

As far as the use of epinephrine is concerned, in the proper dosage, it does not harm most cases of cardiac disease. It is quite useful in some, and I have used it for relief in cases of cardiac asthma with good results.

I believe there will be few cases in which there will be necessary the differentiation between cardiac asthma and bronchial asthma with no cardiac involvement. However, for such a diagnosis it is good to have at one's command a simple method such as Dr. Browning has given us.

Dr. Warren T. Vaughan, Richmond, Va.—We all see cases with occasional deep sighing inspiration and expiration, usually sent in as asthma. Several months ago a man came in complaining of periods of jitters; each day he would get jittery, his hands would tremble and he could not do his work very well. He had sighing respiration when jittery. One physician had given him phenobarbital. Later he went to another who found him sleepy and sluggish and gave him thyroid extract. When he saw us he was taking both thyroid and phenobarbital. His symptoms suggested hyperinsulinism. His sugar tolerance curve dropped to around 48. On a high fat, high protein, low carbohydrate diet, his jitters cleared up. Incidentally, he remarked that his sighing respiration had also disappeared. We have since seen three other cases, all sent in for asthma, all with sighing respiration and no true asthma. Two of the three had sugar tolerance curves of hyperinsulinism, and were relieved on appropriate diet. The third was not. Dealing with asthma, we are going to see this type of case, and I present hyperinsulinism to you as a possible cause in addition to the neuroses mentioned by Dr. Browning.

The sugar tolerance test should be carried over a long time. The first part of the curve may be normal; it may be a hyperinsulin type of curve; it may even be the diabetic type of curve, but whether it is normal or abnormal, unless the blood sugar drops below 50 the test should be continued for as long as four or even five hours, in search for a delayed fall.

Dr. Browning (*closing*).—When an individual comes into my office who is past 60, sometimes a little younger, who has developed his asthma recently, in other words a late development of asthma, about the first thing that I do is a circulation time test on him. If I find that he has prolonged circulation time my usual routine is to put him at rest and give him small doses of morphine. If I do a circulation time test and determine that his heart is good I proceed with the allergic survey. I avoid morphine in such cases.

Dr. Davison's explanation of sighing dyspnea is interesting and I am glad to hear it. I have no explanation myself. I quoted Haldane's explanation.

Just how many cases we will find are due to hyperinsulinism I have no idea. I have done no curves on them.

TREATMENT OF LICHEN PLANUS*

By A. H. CONRAD, M.D.
St. Louis, Missouri

This discussion is intended to be a review of the literature of the treatment of lichen planus and not a revelation of a new or specific treatment. Judging from the multitude of reports of different treatments of this disease, one feels justified in assuming that so far no specific has been discovered for lichen planus.

From an etiologic standpoint this disease is still a mystery. Various investigators have advanced theories, claiming that it is due to an infectious agent, that it is of psychogenic origin and still others hold that it is a combination of both. In 1933, Jacob and Helmbold reported the isolation of an anaerobic, non-motile, unencapsulated, nonspore-bearing, gram-negative bacillus in 25 or 28 cases. Inoculations with this organism into human skin produced in a few cases lesions which were clinically and histologically lichen planus. Other investigators in attempting to corroborate this evidence have failed. A virus has also been advanced as the etiologic agent. Still others feel that the cause of lichen planus is not a pathogenic organism, but rather that the disease is the result of psychic trauma of an acute or chronic nature. No doubt most of you have been impressed by the relationship of sudden grief and worry to the outbreak of an attack of acute lichen planus. Dr. Joseph Eller reported an increase in the incidence of the disease following the financial depression in 1929. However, English workers found no increase during the first World War. It is quite frequent to find recurrences of the disease following periods of depression or worry. Engman feels that the psychic trauma, *per se*, is not the etiologic agent but that the insult to the nervous system predisposes to the onslaught of the eruption.

Certain investigators feel that the etiology, whatever it may be, is associated with the central nervous system as evidenced by an increased number of large mononuclear cells in the spinal fluid. So, at least for the present, I believe we can safely assume that the etiology is still a matter of debate.

The therapy of this malady must be discussed under three categories based on the stage of the disease, namely: the acute, the chronic and the hypertrophic. In the acute outbreak of lichen planus there is probably no drug which causes so rapid relief of symptoms as the intramuscular injection of a 1 per cent solution of bichloride of mercury in normal saline. This is given in doses of 1 c. c. two to three times a week. The pruritis usually is relieved by the first or second injection and the case responds fairly rapidly. However, it is often impractical to give injections of mercury. Occasionally the use of mercury by mouth or arsenic by mouth combined with antipruritic lotions will prove quite satisfactory. The mercury is usually prescribed as the mercury and chalk tablets and is administered in doses of 1 grain, taken three times daily. The protiodide of mercury may also be used. The arsenic may be given as arsenic trioxide in doses ranging from 1/50 to 1/20 grain. This is given in the form of the familiar asiatic capsule. Arsenic may also be given as Fowler's solution. These methods often prove of great value when treating an elderly patient or one who lives at a great distance and cannot be seen oftener than once a week.

Another treatment which has recently been proposed by Burgess in the *Canadian Medical Association Journal* is the use of vitamin B complex. Burgess treated 15 cases, using liver extract and the various components of the B complex. Four of these cases, however, failed to respond and he feels that this was the result of undue nervousness and worry. This work probably was inspired by a report in the Bulletin of

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the French Society of Dermatology and Syphilology in June, 1939, by Tzanck, Sidi, and Tardieu of the cure of three cases of lichen planus, following the injections of nicotine acid amide. All of these three cases showed the involvement of the mucous membranes.

Another treatment used in acute lichen planus is indirect x-ray. This was first proposed by Pautrier, Driver, Marin and Prieto. The Foersters were the first to introduce it in America. This consists of the use of unfiltered radiation giving one unit over the dorsal and lumbar vertebrae at right angles to the laminae. It has been our experience, however, that this treatment is seldom of any value. The use of local x-ray does seem to be very beneficial. The usual dose is ¼ of a skin unit administered once weekly. Usually four to six treatments are sufficient to improve the patient.

Several treatments based on a psychic effect have been proposed. One such treatment which has now been discarded is that proposed by Pernet and Pautrier. This consisted of the use of spinal puncture. It is also possible that the x-ray which is given over the spine has a similar action. Some investigators have even claimed to have cured this disorder by the use of suggestion. I feel that these procedures may be discarded as unsatisfactory. Stevenson of Oklahoma reported the cure of a patient following four injections of manganese butyrate.

A form of treatment which has come into prominence in the past 10 years and which we found very satisfactory is the use of bismuth. This may be given either as the bismuth salicylate in oil or an aqueous solution of bismuth potassium tartrate. The bismuth in oil is given at weekly intervals while the aqueous solution must necessarily be given 2 to 3 times a week. We feel that the aqueous solution is superior, even though it necessitates more office visits for the patient.

Arsenic has been one of the mainstays in the treatment of lichen planus for many years. Sutton feels that neoarsphenamine is of no value in the treatment of lichen planus though others have claimed to have had excellent results. It is interesting to note that sometimes during the treatment of syphilis with arsenicals an eruption develops which is clinically indistinguishable from lichen planus. Pathologically these lesions are said by some to be identical with lichen planus, while others feel that they can differentiate the two. Arsenic is usually given in the form of 2 per cent solution of sodium arsenate and is administered intramuscularly at intervals of 2 or 3 days. We have found this to be quite effective. It may also be given in the form of sodium cacodylate. This is given at weekly intervals. As mentioned before arsenic may be given by mouth.

Next we come to different combinations of arsenic and heavy metals. The first we will mention will be bismarsen, which is bismuth arsphenamine sulfonate. This was reported by us two years ago at this meeting. We have been using it ever since that time and have found that it is very helpful in cases many of which prove unsatisfactory to other forms of therapy. Our dosage has not changed and we still employ 0.1 grams given twice a week. I would again like to emphasize, at this time, the necessity of caution in the use of this drug. We have found that we have more success in the treatment of lichen planus of the buccal mucous membranes with this drug than with others.

The last phase in this discussion is the treatment of the hypertrophic form of lichen planus. This form probably presents the most difficult problem in the treatment of this disease. Various and sundry methods have been advanced but are usually unsatisfactory. Most of these are based upon destructive measures. Dennie and Morgan of Kansas City suggest the use of a 1 per cent solution of procaine hydrochloride injected intra-epidermally. This brings about a temporary ischemia with a possible necrosis of the injected area. Another method is the use of solid carbon dioxide. Another destructive measure is the use of a keratolytic paste, which incorporates 30 per cent salicylic acid. Most of us have found x-rays helpful in the treatment of this phase of the disease.

DISCUSSION (*Abstract*)

Dr. Roy L. Kile, Cincinnati, O.—The etiology of lichen planus is certainly an interesting subject. We ought not to deny the relationship of this disease to sudden nervous shock. Not only does the disease sometimes appear after sudden nervous shock, but I have seen, on several occasions, the disease disappear after using a placebo for several weeks.

The number of treatments suggested for lichen planus in itself is evidence that we have no specific, but I can strongly vouch for the statements that Dr. Conrad has made for the use of bismarsen.

It has one definite disadvantage and that is its cost. It is much more expensive than the other commonly used preparations, but I think its value exceeds this objection.

I usually start with 0.1 gram and increase this to 0.2

gram after the second or third injection, depending on how much pain has been caused.

Many extensive cases of lichen planus that have had other methods of treatment respond to the injections of bismarsen. Usually it takes six or eight injections before much improvement is noted, but after ten or twelve injections the lesions usually have completely disappeared.

As you are all aware, lichen planus tends to recur. Hence I sometimes carry the treatment on, at two weeks or one month intervals for some time. I think bismarsen is a definite improvement over our older methods of treatment of this disease.

Dr. Dudley C. Smith, University, Va.—Several years ago I heard a paper on the treatment of lichen planus with x-ray over the cervical spine. In discussion of that paper, another physician showed a lantern slide of a patient who had been treated in this way and in the area of skin which had been exposed to the x-ray there was an eruption typical of lichen planus.

Dr. Conrad mentioned Burgess's recommendation in regard to treatment of lichen planus. We have been using liver extract injections and vitamin B complex by mouth in the form of brewers' yeast; and we think we are getting better results than we get with any other method. We use the unconcentrated liver extract. The manufacturer in his concentrated liver extract attempts to get as much of the pernicious anemia factor per c. c. as possible. In the treatment of lichen planus you want a high content of B complex. We are giving 3 c. c. three or four times a week, and at the same time giving brewers' yeast by mouth.

Dr. Richard S. Weiss, St. Louis, Mo.—In generalized cases of lichen planus in our hands, the use of bismarsen has been most successful and has produced results, as Dr. Kile has outlined, and the eruption tends almost completely to disappear in six to eight injections. Furthermore, it is necessary to give a few injections at wider spaced intervals for a month or two following the disappearance of the eruption. Lichen planus of the mouth in our hands yields a little better to bismarsen than to any other method of treatment.

Dr. Everett R. Seale, Houston, Tex.—Among the various methods of treating lichen planus, many have something in common, namely: frequent office visits, painful office visits or the use of impressive modalities.

Inasmuch as improvement is frequently noted from any or all of the above, the importance of psychotherapy cannot be overlooked.

In many of the severe acute cases that I have seen, worry and environmental conflicts have been quite prominent and these people have improved only by changing the environment or by psychotherapy.

Dr. Richard L. Sutton, Jr., Kansas City, Mo.—We seek out foci of infection in lichen planus with great diligence, and consider this, as Dr. Chipman did (J.A.M.A., 71:1276, 1918), a valuable measure indeed. We use acetarsone by mouth, one tablet of the standard 0.25 gram size, twice a day, a modest dose. Vitamin C intravenously in a dosage as great as 500 milligrams at a time seems to help. It takes from two to six months with this method as with the others.

Dr. Conrad (closing).—From the discussion it is obvious that this is a problem by which we are all confronted quite frequently. This paper, as I have stated before, is not to advocate a new treatment but is merely a review of the literature on the treatment of lichen planus.

However, I should like to reiterate our results with the use of bismuth arsphenamine sulfonate (bismarsen). It is especially valuable in cases which have been obstinate or refractive to other modes of treatment. As has been said, the administration of this drug is somewhat painful but this objection is usually present following only the first one or two injections. However, we make it a practice to advise our patients of this fact, and so far we have had no difficulty in having them return for further treatment.

MINERAL OIL AND SALINE LAXATIVES*

RELATIONSHIP TO ANORECTAL INFECTIONS AND THEIR TREATMENT

By GEORGE H. THIELE, M.D., F.A.C.S.
Kansas City, Missouri

In the medical literature of the past two or three decades, there have appeared a number of papers mentioning the use of mineral oil as a laxative. During the early part of this period, comment on mineral oil drug was favorable and we began to see it combined with agar in the form of an emulsion to prevent the seepage which had been found to complicate the use of the plain oil. A little later other drugs, such as phenolphthalein, cascara and magnesium oxide, were added to mixtures of mineral oil and agar for use in the more obstinate types of constipation.

It was not until the interest of the profession became centered upon the vitamins, however, that we began to read critical articles condemning the use of mineral oil and its preparations because they were thought to remove the oil-soluble vitamins and lead therefore to vitamin deficiency. As investigations[1] continued, it was found that the habitual use of mineral oil often led to loss of weight which was ascribed to three causes, namely: (1) coating of food particles with a film of oil, thereby preventing digestion; (2) coating of the glandular elements of the intestinal mucosa, with presumable interference with the secretions of digestive enzymes; and (3) interference with absorption both by an oily film surrounding food particles, and also by rapid

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transit of the food mass by hyperperistalsis occasioned by the mineral oil.

Surprisingly enough, no discussion of mineral oil from the proctologic viewpoint appeared until Morgan,[2] in 1938, published a paper entitled "Misgivings on Mineral Oil as a Laxative." Morgan discussed the pharmacology of mineral oil and its preparations, and outlined the physiologic considerations of normal bowel habit as affected by mineral oil, and summarized the salient facts as follows:

(1) Mineral oil lubricates the rectosigmoid and makes a reservoir of the rectum. (2) Mineral oil makes complete evacuation impossible. (3) Mineral oil has a very deleterious effect upon the nutritional economy of the fat-soluble vitamins. (4) Mineral oil hastens the motility of the bowel contents and thereby prevents complete digestion. (5) Mineral oil may interfere with the process of absorption throughout the bowel. (6) Mineral oil interferes with the healing of postoperative wounds in the anorectal region. (7) Mineral oil is often the indirect cause of pruritus ani. (8) Evidence is accumulating that mineral oil may be absorbed, producing pathologic changes in the liver and other abdominal viscera.

My interest in mineral oil and the saline laxatives was aroused several years ago by the observation that these drugs seemed to bear a direct relationship to the incidence of acute anorectal infections. It had been noted that patients with acute anorectal infection more frequently than normally gave a history of having habitually taken mineral oil or a saline laxative; or that acute infection, too often to be coincidentally, followed the administration of a single large dose of mineral oil or a single saline purge. For a period of three years this observation was confirmed, and my case history sheets were then altered so that in every history there was a record of the specific laxative used, and the time of beginning its administration with respect to the time of appearance of the patient's rectal symptoms.

The intervening years since accurate data have been recorded, have served further to confirm the original concept that a definite relationship exists. Before discussing the manner in which mineral oil and saline laxatives contribute to the incidence of anorectal infection, a review of the normal physiology of the lower bowel seems desirable.

A fact often overlooked is that the normal human stool is of such consistency and cohesiveness that it is passed from the rectum as a unit. This fecal mass should be about the size, shape and consistency of a well-ripened banana. The first portion of the stool is normally somewhat firmer and drier than the last portion. This accounts for the fact that in normal defecation, the terminal two or three inches of the softer portion of the stool breaks off and remains within the rectal ampulla for a few moments. In the individual whose normal threshold of rectal sensation has not been raised by habitual laxative administration or by failure to heed the urge for defecation, this small portion of stool resting in the lower rectal ampulla re-excites the defecation reflex and is expelled, leaving the rectum empty and its mucosa clean.

The administration of mineral oil alters the above normal sequence of events in several ways. As Morgan pointed out, when large doses of mineral oil have been taken, the very soft consistency of the stool allows its passage through the so-called sphincter of O'Bierne at the rectosigmoid juncture without the patient's being aware of its presence in the rectal ampulla, which then becomes a fecal reservoir. The habitual administration of large doses of laxatives keeps the stools so soft that they do not excite the normal defecation reflex, and finally the excitation of this reflex, even by a stool of normal consistency, becomes almost, if not entirely, impossible. The patient then becomes a laxative addict. Failure to dilate the anus with a stool of normal consistency eventually leads to anal contraction, and if chronic anal infection has existed, results in fibrous anal stenosis.

Now what occurs when moderate doses of mineral oil or saline laxatives have been given, and the resultant semi-solid stool is forced through the anal canal? In the case of the mineral oil stool, whether the dose has been large or small, an oily suspension of bacteria is expressed from the stool as it is compressed in being forced through the anal canal. The same facts obtain with the stool produced by saline in laxative (not purgative) doses, the only difference being that the bacterial suspension is watery instead of oily. In the case of the purgative saline stool, the stool is more liquid, and less intra-rectal pressure is necessary for its expulsion. The mechanical factors involved with a very liquid stool differ therefore from the mechanical factors obtaining with the semi-solid stool from which oil or water is expressed when the stool is forced through the anal canal.

Inasmuch as the mouths of the anal crypts are located at the level where anal dilatation occurs, the passage of a mineral oil or saline stool is impossible without an oily or watery suspension of bacteria existing under pressure at the mouths of the anal crypts. The suspension is therefore forced into the anal crypts and possibly also into

their tributary ducts. Whether or not an acute cryptitis ensues depends upon three factors, as follows: (1) Whether the crypts have been traumatized by the previous passage of hard or scybalous stools for the relief of which the oil or saline laxative was taken; (2) whether there is or is not a coexisting upper respiratory or enteral infection contaminating the stool with bacteria for which the anal tissues exhibit no local tissue immunity; and (3) whether there has been irritation of the anal membrane and anal crypts by chemical substances contained in the stools because intestinal enzymes have had insufficient time, or insufficient access through an oily membrane, to accomplish normal intestinal digestion.

I believe that the concept just outlined offers an adequate explanation for the sequence of acute anal infection following the administration of mineral oil or saline laxatives.

Once infection of the anal crypt occurs, it spreads distally through the anal lymphatics in the same anal radius as the crypt. The anal membrane loses its normal elasticity and an anal fissure results. Ulceration of this fissure produces what we call an anal ulcer. Fissure may exist for weeks without the formation of an anal ulcer, or the ulcer may develop in just a few days. Such an ulcer has thickened epithelial margins and a smooth gray crater. Chronic ulceration results in the formation of the sentinel pile described by Brodie. It is not important whether we call these lesions anal fissures or anal ulcers, so long as we are discussing the same pathologic entity in its different stages of development. I am not referring in this paper to the simple crack or fissure of the anal membrane which sometimes results from simple overdistention of a perfectly normal anus by too hard or too large a stool. We are now concerned with the role which mineral oil and saline laxatives play in the production of anal infections, whether cryptitis, fissure or ulcer.

The material upon which this paper is based consists of one hundred and sixty cases of anal ulcer, the so-called ulcerated anal fissure. This series of cases, while admittedly quite small, represents only those cases encountered in private practice since accurate records have been kept as to the time of mineral oil or saline laxative administration with respect to the time of onset of symptoms of the anorectal infection which eventually resulted in frank anal ulcer.

Anal ulcer was selected as the lesion upon which to base this study, because it was felt that this lesion ordinarily produces symptoms of sufficient severity to warrant consultation with the proctologist. The pain associated with anal ulcer is also so severe that ordinarily the patient remembers distinctly when his symptoms began. He therefore knows whether he began taking a laxative before or after the onset of his symptoms. Abscess formation, while a suitable lesion from many standpoints for such a study as this one, often occurs years before the patient consults the proctologist for the cure of his fistula and memory must therefore be relied upon to too great an extent in estimating the date when laxatives were begun. Anal cryptitis, on the other hand, is often of mild severity and may be so evanescent that the patient finds himself comfortable upon the day he had chosen to consult the proctologist.

Of this series of one hundred and sixty cases of anal ulcer, sixty-seven had taken mineral oil when they consulted me. In fifty-eight (87 per cent), mineral oil had been taken either habitually, or in large dosage for acute dyschesia, immediately preceding the onset of anal symptoms. Only nine (13 per cent) of the sixty-seven patients gave a history of having begun the use of mineral oil after the onset of the acute symptoms of anal fissure or ulcer. This fact is contrary to our usual conception of the use of mineral oil by the unadvised patient. I am sure that most of us have felt that our patients usually begin the use of mineral oil after the symptoms of anal disease have appeared; but I am also sure that most of us have not questioned patients as to whether they took mineral oil or saline laxatives prior to the onset of the pain of the anal lesion for which they consulted us.

Thirty-three additional patients had taken other than mineral oil laxatives. Twenty-two (70 per cent) of these had taken such laxatives either habitually or immediately preceding the onset of anal symptoms. Five patients said that they began the use of laxatives immediately after the onset of symptoms, and six were not certain as to whether they had begun laxatives before or after the onset of symptoms.

Of the total one hundred and sixty patients, eighty had taken either mineral oil or other laxatives just prior to the prodromal symptoms of anal ulcer. Obviously then, the question to be decided is whether, if mineral oil or other laxatives were taken preceding the onset of symptoms, by only eighty (50 per cent) of one hundred and sixty patients, that fact is of any significance in deciding whether mineral oil or saline laxatives bear any causal relationship to anal infections.

To obtain an answer to this question, it was necessary that one have at least an equal number of patients in whom the administration of mineral oil or saline laxatives had been controlled over a sufficient length of time, and that one determine the incidence of anal infection in such a group of patients.

Fortunately such a controlled group of patients was furnished by H. G. Hamilton,[3] who had ample opportunity to control the intake of laxatives during the prenatal period of his patients, roughly estimated at seven months. Before the following observations were made, I had formerly seen his patients quite frequently in consultation because of acute anal disease during late pregnancy or during the puerperium. The lesion most commonly found was acute cryptitis with fissure. On questioning Dr. Hamilton and his patients, I found that he was in the practice of prescribing one of the mineral oil preparations to prevent the formation of hard stools in the latter months or weeks of pregnancy. It was therefore suggested that instead of using mineral oil preparations, he use one of the gum laxatives without cascara, prescribe a smooth diet in the latter half of pregnancy, and insist that his patients drink from twelve to fifteen glasses of water daily unless there were contraindications to such fluid intake.

Since adopting these simple measures, Hamilton has recently delivered his three hundred and fiftieth mother. Only six (1.7 per cent) of these three hundred and fifty patients had any rectal complaints or developed any anorectal disease. These six patients were all either blondes or redheads, and all had been given ether-oil rectal anesthesia. Dr. Hamilton says that all of the six patients had a proctitis which he attributed to improper mixing of the ether and oil.

Hamilton's experience is borne out by that of Gainey.[4] Dr. Gainey reported eight cases (1.7 per cent) of acute anorectal disease in a series of four hundred and seventy-five private obstetrical patients. Gainey states that mineral oil preparations were not prescribed for any of these four hundred and seventy-five patients, although some of them may have used these drugs without his knowledge.

In contrast to Hamilton's and Gainey's experience with private patients, Gainey reports on 1,275 obstetrical patients at the obstetric clinic at the University of Kansas School of Medicine. At this institution, plain mineral oil in dosage of one tablespoonful twice daily is prescribed routinely for all patients who need a laxative. Gainey does not know how many of the 1,275 patients took mineral oil, but the clinic records upon which is written every rectal complaint during the prenatal and postpartum periods, reveal an incidence of anorectal disease in 5 per cent of the 1,275 patients. Comparing this 5 per cent with Hamilton's and Gainey's 1.7 per cent, we find that the incidence of anorectal infections was almost three times as great in those patients receiving mineral oil as in their private patients for whom no mineral oil was prescribed.

The usual gum laxative will absorb and retain several times its own volume of water. Water must therefore be given in liberal quantities if the optimum results are to be obtained. These laxatives should be given immediately after meals to assure their even distribution throughout the fecal mass. A level teaspoonful should be swallowed a few granules at a time, each few granules being washed down with a swallow or two of water, followed by a full glass of water after the last of the granules have been taken. Gum laxatives when given immediately after meals mix intimately with the food, and insure a stool all parts of which are soft enough to prevent anal trauma. Such a stool is cohesive and retains its moisture when passing over the anal crypts, which, therefore, escape distention with bacteria-laden fluids.

Mention of the use of gum laxatives calls to our attention the possibility of allergic reaction to the ingestion of karaya gum. Figley[5] reported sixteen cases of allergy to karaya gum which is the base of practically all of the gum laxatives. Only seven of the cases he reported had ingested the gum, and in only three of these had the gum been taken as a laxative. Gum drops, ice cream and jelly beans accounted for the other four cases. The remaining nine allergic reactions which he reported were due to the use of karaya gum as a wave-set in dressing the hair.

I have prescribed thousands of doses of the various gum laxatives, and so far as I know, I have never encountered an allergic response to the ingestion of these preparations. I have had eight or ten patients who had four or five stools a day while taking three level teaspoonsful of gum laxative daily, and it is possible that this unusual response to such doses might constitute an allergic reaction. Patients who take gum laxative, quite frequently will notice upper abdominal fullness after the ingestion of the drug, but I have attributed this symptom to overfilling of the stomach. In none of my patients has this symptom of fullness after meals

occurred after the first two or three days of gum laxative administration.

Of interest to us also is the recently published study by Javert and Macri[6] of the effect of the ingestion of mineral oil upon the blood prothrombin concentration of pregnant and nonpregnant women. In a series of ten patients who took an average daily dose of 25 c. c. of mineral oil, the prothrombin concentration was reduced from its normal level of 100 per cent to an average level of 55 per cent in seven of the ten patients. The other three patients maintained a normal level of 100 per cent. These authors state that the role of mineral oil in producing hypoprothrombinemia is probably by prevention of absorption of vitamin K, or by absorption of the vitamin by the mineral oil, or by interference with bacterial synthesis of the vitamin.

This study raises the question as to whether the tendency toward abnormal bleeding from hemorrhoids or other anorectal lesions may be due in some cases to the habitual use of mineral oil by the patient. I am sure that we all have had the experience of having a patient tell us that he began using mineral oil to prevent bleeding from hemorrhoids, only to find that the bleeding became more profuse instead of less so.

That mineral oil delays the healing of anorectal wounds is too well known to require further comment. Its use after fistulectomy is particularly undesirable, as it is well known that the drier and cleaner these wounds are kept, the more rapidly they fill in with healthy granulations. Many cases of simple anal fissure require nothing further for their successful treatment than abstinence from mineral oil and its preparations, local cleanliness, and the use of small doses of a gum laxative to soften the stool.

SUMMARY AND CONCLUSIONS

(1) Mineral oil and saline laxatives alter the normal physiology of the lower colon and rectum.

(2) When mineral oil and saline laxative stools are compressed in passage through the anus, an oily or watery suspension of bacteria is forced into the mouths of the anal crypts. Practically all anorectal infections are secondary to cryptitis.

(3) Acute anorectal infection follows the administration of mineral oil too often to be coincidental.

(4) In a large obstetric clinic where mineral oil is prescribed routinely, the incidence of anorectal infections is 5 per cent. In two private obstetric practices in which mineral oil preparations are not prescribed, the incidence of anorectal infection is only 1.7 per cent.

(5) The use of gum laxatives without cascara is suggested. The gum laxative stool retains its moisture and therefore does not contribute to anorectal infection.

(6) The administration of mineral oil reduces the blood prothrombin level and may account for abnormal hemorrhage in those cases.

(7) Mineral oil unquestionably interferes with the healing of all types of anorectal wounds.

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DISCUSSION (*Abstract*)

Dr. Hugh Hamilton, Kansas City, Mo.—I feel like an interloper coming from the section on obstretrics to speak before you. From an obstetrical standpoint, the rectum is an unmitigated nuisance and serves us only as a mode whereby we can determine the progress of labor. Outside of that we have no use for it.

Unfortunately, however, it has a high nuisance value. The congestion, the fact that we traumatize the rectum repeatedly in the course of our rectal examinations and irritate it markedly with our Gwathmey technic for the relief of pain in labor make it a troublesome problem in obstetrics.

Prior to the work that Dr. Thiele has discussed before you, we found that we had anorectal irritation in from 8 to 10 per cent of our cases. It was a common and bitter complaint on the part of many of our patients. When we ceased to use any of the mineral oils or the mineral oil mixtures, we found there was a very interesting drop in these complications, the anorectal irritation, the cryptitis, and so forth. Before this time we ran 8 to 10 per cent of anorectal complications of the ulcerative type. Since we have used the bulk laxative type of treatment of the bowel in pregnancy and postpartum, we have reduced this significantly. In the last 362 cases there have been only six cases of actual anorectal irritation. I am including hemorrhoids and other complications that we see. I am referring to a true irritative proctitis of whatever sort it may be. These have occurred as a rule in the type of individual that you would expect to have a sensitive skin or sensitive mucous membrane, the blond or the redhead rather than the brunet.

For the last year we have been giving synthetic vitamin K to our patients, the last two or three weeks of the antepartum course, and that has been coupled with the use of bulk-producing laxatives. There is a diminution in the blood loss in the women who did not receive the mineral oil laxatives and a greater reduction in the group who received vitamin K.

Dr. Vernon G. Jeurink, Denver, Colo.—Many of u have questioned for a long time the wisdom of giving mineral oils over long periods to persons with bowel difficulties. While Dr. Thiele has been especially interested in the influence of mineral oil on the etiology of anorectal disease, my interest has been more centered on the effect of mineral oil upon the healing of tissues.

It seemed that when we routinely gave oil postoperatively, a considerable number of these patients had more edema and fibrosis than we expected. We therefore discontinued the routine use of the mineral oil preparations and I believe that our eventual results have been considerably better. We observed that patients seemed to have less pain when no oil was administered. Apparently there is less burning after a fairly normal stool than when some of an oily stool remains on the wall of the ano-rectum and bathes the incisions in an irritating fecal suspension.

The discussion of mineral oil brings up the interesting subject of hydrocarbons. We recall that many types of tumors have been reported following the injection of various oils into the tissues. Rosser once mentioned the incidence of oil tumors following the injection of oily solutions into hemorrhoids. We remember that, in the old days, plastic surgeons beautified mankind by the injection of liquid paraffin into sagging tissues, and the mutilating fibroplastic reactions which often resulted. Many similar lesions have been described, including "mule spinner's" and "tar" cancers and the "camphorated oil tumors" which frequently occurred during the period when the parenteral injection of camphorated oil was popular. Recently I had occasion to read a booklet published by the Public Health Service on "Occupational Dermatoses" and was amazed to note the number of these found in petroleum workers.

The old time plastic surgeons felt that if they injected the paraffins with higher boiling points, they had fewer of the marked fibroplastic reactions. In other words, they were attempting to eliminate, by distillation, the very oils which we use because they felt that the lower members of the hydrocarbon group induced more hyperplasia of fibrous tissue. There could be little real difference, except in degree, whether we inject the oil into the tissues or merely leave it in contact with open incisions.

All these reports suggest certain conclusions, among which is the observation that the oils do not affect all individuals in the same way. There must, apparently, be some sort of predisposition in certain tissues which causes them to react to contact of mineral oil by the overproduction of fibrous tissue. I do not contend that postoperative stenosis of the anal canal is always caused by mineral oil or that mineral oil always causes fibroplasia, but I do believe that this is an important factor in many cases.

In conclusion, I should like to compliment Dr. Thiele on his presentation. I wonder if there might be many other little procedures in proctology which we have carried out routinely and unquestioningly for a long time, which might not well be scrutinized more carefully.

Dr. William J. Martin, Jr., Louisville, Ky.—In using mineral oil in diverticulosis, are we really accomplishing anything, preventing anything, or are we just following an old custom? Do the benefits derived from its use outweigh the many disadvantages? If some lubricant is necessary, what substitute could be used?

Dr. W. K. McIntyre, St. Louis, Mo.—The taking of oil causes indigestion. Many of the patients express the fact they feel distended and gassy. Furthermore, the competence of the rectosigmoid valve is destroyed and as a consequence the reservoir effect of the more proximal bowel is lost.

Many investigations have been made regarding vitamin loss with the use of liquid petrolatum, and it can be safely said that this lubricant interferes with the utilization of carotene and to a lesser extent with the vitamin A concentrate and with fat soluble D.

Evidence is accumulating that oil is absorbed and produces pathologic changes in the liver and other abdominal viscera.

Finally, the use of petrolatum is an indirect cause of pruritus ani as result of leakage.

Dr. Raymond L. Murdoch, Oklahoma City, Okla.—Everyone agrees that we ought to get along without medicine as much as we can. No one will argue with Dr. Thiele that we ought not to take mineral oil all our lives, but, as I understand it, all discussion here has veered towards the point that postoperative patients ought not to take mineral oil, or that mineral oil should not be taken even for limited times. I cannot subscribe to that.

I should like to ask why, if vaseline applied to raw surfaces has been proved through the ages to be very satisfactory, a little mineral oil on the raw surface of an anorectal operation would be harmful?

As I understand it, when vaseline gets into the body warmth of the intestinal cavity, it is mineral oil. It is called petrolatum, and its fluid state varies according to its temperature.

Then I think there has been some flight of fancy in the various discussions; at least there are some things still to be proved as to whether the coating of the villi of the intestines is deleterious. Some allergic patients will tolerate their indicated food allergens if they will take a tablespoonful of mineral oil before starting each meal. We cannot say that the occasional coating of the villi of the intestine with an oil is a terrible thing. We cannot prove it.

Certainly one should not indefinitely take drugs, but should be on a good general diet.

Dr. Thiele (closing).—In answer to Dr. Martin's question about diverticulitis, I may say that the prob-

lem is now being investigated by other workers, and I believe that a report will be forthcoming before long.

So far as the relationship between indigestion and mineral oil is concerned, it is difficult to determine whether the patient who has taken mineral oil chronically, has his indigestion because of the mineral oil, or whether he had a pre existing chronic gallbladder infection or other lesion before he began taking mineral oil.

Dr. McIntyre has brought up the question of liver damage caused by mineral oil. I believe, Dr. McIntyre, that you evidently have read the report by Twort and Twort mentioned by Morgan. I believe that Dr. Morgan incorrectly quoted Twort and Twort, to the effect that mineral oil taken by mouth could be found in vacuoles in the liver. Twort and Twort did not make that statement. They merely said the vacuolization occurred in the liver, spleen, adrenals and other organs, but they did not identify the contents of these vacuoles as mineral oil. I have consulted Dr. Ferdinand Helwig, our pathologist, about this question, and Dr. Helwig feels that such vacuolization is merely an evidence of the toxic manifestation of the drug in the body, and that so far as he knows, there is no conceivable way in which mineral oil taken by mouth could be resynthesized in the liver or could be carried directly to the liver from the intestine. The presence of mineral oil in the liver has not been proven.

Dr. Murdoch has brought up the question of whether mineral oil can interfere with the absorption of food. He said that he had observed that a dose of mineral oil would prevent an allergic reaction to a food, in a patient who was ordinarily sensitive to that food. I do not believe that one could cite better evidence of the interference of mineral oil with the absorption of food, than Dr. Murdoch has given us. In other words, if a patient were sensitive to milk, and a tablespoonful of mineral oil before meals containing milk would prevent a reaction to the milk, I believe that is very strong evidence that mineral oil has had something to do with the inhibition of the absorption of milk.

Mention has been made of the use of vaseline on rectal wounds. Sterile vaseline is far different from the oily bacterial suspension which drains down over an operative wound when mineral oil has been given to soften the stools. I believe that most of us use vaselined dressings on these raw wounds during the first week after operation; but my practice is to discontinue vaseline dressings as soon as there is a granulating surface to which ordinary dry dressings will not adhere. I believe definitely that the wound thus treated will heal more rapidly than when covered with a grease, whether it be vaseline, lanolin or any other greasy medication.

I first became interested in this problem in 1934, and the cases which I cited have been seen since 1937. My impressions, based upon my own patients, may not be conclusive, but I do believe that the experiences of Hamilton and Gainey with their private patients for whom no mineral oil was prescribed, and with their private and clinic patients for whom mineral oil was prescribed, point the way to further investigation.

A DYNAMIC APPROACH TO PSYCHOPATHIC PERSONALITY*

By LAWRENCE F. WOOLLEY, M.D.
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Because of the diversity of ideas regarding the psychopathic personality, it is necessary for anyone approaching this subject to define what he means to include in the concept. We understand by this term all those personalities of normal or near normal intelligence who show throughout life a relative inability to forego a present satisfaction for a future gain without evidence of organic damage to the central nervous system. This limits the range of personalities much more than most authorities would be willing to sanction. Nevertheless, this definition includes a large homogeneous group of personalities who practically all psychiatrists would agree are psychopathic and who have in common the trait by which we define them.

During the past ten years we have admitted to the Sheppard and Enoch Pratt Hospital over 250 patients who have been diagnosed as psychopathic personality with or without psychosis. In moments of candor regarding their behavior a surprisingly large number of these have made spontaneous comments similar to the following:

A 16-year-old female psychopath told us: "I never know when things are going to come into my head, and when things do, then I seem to do it without thinking about it. They say I am impulsive. There is no sense in stopping to think of things before you do them. I have an active brain and I think quickly and after I think a thing why not do it?"

A 25-year-old psychopathic female said: "When I get mad I lose control and throw things and curse them out, and try to hurt some of them; but I think they had it coming to them."

A 50-year-old psychopath, who later shot her divorced husband's second wife, said: "I have the right impulses in every situation and I fail to act on those impulses and I do something else and disaster results. I wanted to grab everything, don't you know; bite off just as much as I could chew. I really believe there was a disinclination to look at the other person's point of view. It was always whether it was to my own immediate benefit, don't you see?"

A 29-year-old male psychopath, who was an only child, said: "I was always coddled and given solicitous attention by my mother. I always disliked having anyone in authority over me."

An 18-year-old psychopath with a fairly long record of precarious social adjustment with drinking, truancy

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from school and desertion from the Army, was arrested recently for car stealing. He said: "I wanted to go for a ride. I did not have money to buy a car. I had lost my job because of drinking. I knew I would get caught, but that did not matter. I took the car and drove it out of the state." He describes his father's attitude toward misbehavior on his part as follows: "My father was a good-natured, easy going fellow. He gave away everything he had to anyone who asked for it. He drank all the time. When I got into trouble outside of the home, he got me out of it. Then he would punish me by depriving me of some pleasure, such as going to the movies. My mother would interfere and make him go easy on the punishment." Everyone he encountered tried to help him. Later, he said: "I do not think it is going to be so very bad. This is the first offense for which I have been to trial, and I think I will get off on probation."

A 32-year-old male psychopath said: "When I am drunk I insult my friends and lose them. I cannot control my drinking. I would go in on a job and get my employer's confidence, then everything would crash."

A 35-year-old male psychopath said: "I seem dominated by the whim of the moment. I seem to be unable to forego pleasures of the moment for a future benefit."

A 24-year old male psychopath said: "I always get my own way and when I do not I feel someone has let me down."

A 44-year-old male psychopath with drug addiction said: "Where once I was able to drink as I pleased, play cards, and knew no restrictions to my desires, I am now restrained from these by my wife and mother-in-law and I take to morphine out of boredom."

Such examples could be multiplied many times, but these will suffice for a sample of the kind of thing they often say about themselves. We will now turn for a moment to what others say of them.

An excerpt concerning a 38-year-old male psychopath reads: "Mr. C. is a brother-in-law of mine and is an expert at prevarication. His wife is still living, as well as his two daughters, and the third child is not sick, as he would have you believe. He is also an expert at arranging for necessary funds usually spent in some manner unbeknown to even his best friends. He has been given every chance to make good and yet he has repeatedly thrown caution to the winds." Various employers said of this man that he evaded responsibilities; talked big and did little; was inefficient at work; was irregular in attendance; and he defrauded his employers and fellow workers. All members of the family have exhausted their patience. He is still able to get influential people, even strangers, to extricate him from difficulties.

The timid and prim mother of a psychopathic woman said: "She always had a bad temper. I did not have the strength to oppose her. She most always got what she wanted." She was able to dominate her husband in the same way.

The wife of a 34-year-old psychopath said that he was the mother's favorite child and got whatever he wanted.

The father of a 35-year-old thrice-married psychopathic female said: "I have always been oversolicitous and indulgent." He had abetted her drinking and sexual digressions by supporting her in every whim.

The husband of a 40-year-old psychopath could not understand why she persisted in fraudulent practices when he had already extricated her from many similar difficulties.

The psychopathic female of 50, quoted above, was described: "Being the only daughter, she was catered to and spoiled. She always got her own way but was generous and impulsive." When she was opposed she would have tantrums unless she knew definitely that they would not get her what she wanted.

A 42-year-old psychopathic drug addict is referred to by her husband in these terms: "When opposed she gets into a fit of bad temper and loses control. She throws plates on the floor."

A 26-year-old female psychopath is described: "As an infant and young child she had enuresis, violent temper tantrums, and cried a great deal. The father was at war, the mother had to work, and the aunt and grandmother were totally unable to manage the child. She was never affectionate." This patient, too, always got her own way by such tactics, even to making the family move from South Bend, Indiana, to Washington on two separate occasions.

A male psychopath of 39, descended from a family notorious in the history of feuds, is described as the favorite child of a rabidly religious mother who continuously prayed for "his damned soul." He was always able to get away with whatever he did.

Which is almost identical with the following verbatim statement by the wife concerning a 34-year-old psychopathic descendant of very moral parents: "His mother was devoted to him because he was the wayward one and occupied most of her thoughts because of his drinking and affairs with women." The sister of this man said: "He was born knowing of sex. He was animalistic. He was always resentful and always did as he pleased."

The father of a 27-year-old female psychopath said: "She had temper tantrums from infancy, was very spoiled, was always being coddled and getting her own way and more privileges than the others or than the family could afford. She exploited all the members of the family and spread false stories about them."

The mother of a 24-year-old psychopath said: "I was at work and mama was old and just let him do as he pleased." "As he pleased" began with temper tantrums to get what he wanted in childhood and progressed to writing bad checks, running up bills, and gambling. He was always extricated from these by his mother or his sister.

Another psychopath, this time a 44-year-old male, was described by his wife, who had known him from childhood: "In early life he lived in a hotel with his parents and had the privilege of ordering whatever food he wanted prepared. He was never denied anything. He never knew what it was to be frustrated. He had a taste for extravagance. He is well liked by everybody and has a smooth, tender disposition. He is prone to tell all sorts of tales which are untrue. He drinks and when drunk is abusive to the family."

The mother of another psychopath, a 47-year-old

female alcoholic and drug addict, said: "She always wanted her own way and got it. I did not have the strength to resist. She would not tolerate my being more attentive to another child."

Such examples could go on endlessly. The fact of the matter is that whether they say it of themselves, or their families say it, or it is not said at all, in this series of patients all but a handful in which the diagnosis is open to serious question behaved as if they could not forego present satisfactions for future gains and the histories illustrate with striking regularity their ability to take the satisfaction of the moment and suffer little or no consequences therefrom.

As the above quotations indicate, the defect appears to be in the training of the child who, because of parental attitudes, is trained rather in skills of aggression and indulgence of impulse rather than in the controls which society usually demands in its members.

This view coincides in large measure with that of Aichorn,[1] who describes three types of delinquent: those who are delinquent because of receiving too much love; those who are neglected in the sense of having too much sternness; and those who have a mixture of the two. He believes that in all of these cases delinquency resulted because the task of training the child failed, since the mothers never got around to handling the problem. The causes in each instance are varied but always came to the same thing. He says:

> There was such a weakness of the mother toward the child that one could hardly speak of education. Such mothers are always ready to do anything in order to protect the dear child from discomfort. They are unable to put upon him any deprivations or to bring about necessary limitations of his impulses because the displeasure that would result from that hurts them more than it does him. They are full of busy worries and are uninterrupted in their efforts to keep him happy and are never able to force upon him denial of pleasure. What life should bring in the way of difficulties which the child should learn to conquer and must face in order to be able to survive later, they clear out of the way.

We would also call attention to a study published by Washburne[2] in 1929. Tests were run on a group of school children to determine their ability to delay immediate satisfaction for the sake of a future advantage. At the mental age of eight years there appeared to be a line of demarcation, the majority of children with mental ages above this level showing ability to defer, whereas, the majority of children under this level chose immediate satisfaction. Consistent deferral of satisfaction was associated with socially approvable behavior and the younger the child, the better the behavior. Consistent choice of immediate satisfaction above the age of eight years was associated with delinquent behavior and the older the child the more serious was the delinquency. We have been unable to find any further development of this promising and interesting lead. As far as it goes, however, it gives an indication that the individuals who pursue antisocial patterns through life have somehow failed in the course of their childhood development to achieve that degree of control over their need for satisfaction that would enable them to resist, with any consistency, impulses toward conduct that promises them even a modicum of immediate satisfaction. Hence, the possibility of receiving punishment, which may be evaded and often has been in the past, is, in itself, not a sufficient deterrent from conduct which most of us control most of the time.

It is to be noted that it is not an occasional antisocial act that characterizes the psychopath. We deal with a lifelong trait which has given an appearance of constitutional determinants and led older writers to speak of the "constitutional psychopathic inferior." Occasional lapses are characteristic of normal behavior, and it is often just such departures from a cold, rational approach to life that lend warmth to normal people, making them lovable and endearing them to us. Indeed, psychopathic personalities are almost invariably superficially pleasant and likeable.

It seems to us that to include in the concept of psychopathic personality all those deviate forms of behavior not actually psychotic makes the category more of a scrap-basket than a precise nosological conception and robs it of any practical usefulness. This becomes even more important since some authorities believe that the behavior of the psychopathic personality is actually psychotic although not manifestly so. By our definition we exclude those sharply demarcated personalities that actually fall within the normal range, but which, because of certain behavior characteristics, are reminiscent of definitive psychotic groupings (such as the schizoid, the hypomanic, and the depressive personalities) and which to us represent normal personality types, rather than any form of psychopathy. It also removes from the group those psychoneurotic personalities for which we have adequate definitions in our present psychiatric categories (such as the hysterical, the obsessional, the psychasthenic).

Thus at one stroke, we escape the need for exhaustive categories of types of psychopathic personalities which have occupied much of the

time and attention of most authorities in this field.

We would justify this on both historical and practical grounds. The attitudes of American psychiatrists toward the psychopathic personality developed from two divergent sources. In England, Pritchard recognized certain personality types which he conceived to be devoid of moral sense, and which have often been referred to subsequently as "moral imbeciles." The German school, to which we are indebted for the actual term "psychopathic personality," seemed to be guided by verbal accuracy so that their tendency was to include in this category all personalities which exhibited abnormal behavior. For practical reasons, the actually psychotic became excluded. Probably the best exposition of this viewpoint in English is the work of Kahn.[3] Both the American and English schools have tended to confuse the two ideas so that in actual practice the overwhelming majority of patients diagnosed as psychopathic personalities are habitual offenders against the social mores similar to our group here, while at the same time there is a tendency to include also exaggerations of personality type and various forms of deviate behavior which do not readily fall into the usual diagnostic classifications.

It should be noted that our definition also excludes from this category transient manifestations of similar behavior as seen in the onset of manic excitements and some schizophrenic episodes, as well as more permanent psychopathic-like behavior following organic damage to the brain and those late developing delinquent trends which begin around the age of puberty and represent reactive attempts to break away from overweening supervision and discipline in the home.

Thus, one of our cases classified as a reactive behavior disorder was the son of a minister. His parents, feeling the need to avoid social criticism, kept him from participating in the usual adolescent adventures of his high school associates. In his third year at high school he suddenly turned from being a model child with an excellent scholastic record into a terror to his parents and his teachers. He began to smoke, drink, gamble, write bad checks in his father's name, play truant from school and stay out at night. Because of the sensitivity of his parents to social criticism, it was impossible to liberalize their attitudes toward him. When he was placed in the home of relatives in a distant town, where he was permitted a degree of emancipation consistent with his age and development, his behavior straightened out and there was no more trouble.

It would seem to us a mistake to include such instances in the category of the psychopath, although it is evident that failure to correct such behavior in its beginning might lead to the development of adult patterns habitually delinquent and, on the surface, not to be distinguished from that of the psychopathic personality.

The brevity of case history material presented here requires apology. The life story of any one of these patients would take longer than the time allotted to this essay. For adequate historical material we would refer those interested to such books as, "Bad Companions" by William Roughead[4] or "The Mask of Sanity" by Dr. Cleckley,[5] in which are described case histories altogether satisfactory for the delineation of the personality types under discussion.

All writers have stressed the most outstanding feature of the behavior of these people, to wit: they repeatedly carry out behavior that leads to distress to themselves and to those whom (presumably) they love and who (also presumably) love them. This is usually phrased in the terms: "They are unable to profit by experience" or "They are unable to learn from experience." This is an unfortunate way of stating the case. A more accurate statement of the facts would be to say that they continue to carry out behavior patterns which seem to profit them little and irritate their fellowmen, even though such behavior has at times caused themselves injury. The specific behavior to which society objects may be drunkenness, forging of checks, continual breaking of promises and trusts, "sexual depravity," and similar acts. These are carried out even, at times, when they interfere seriously with what would certainly be thought of as life goals in any other individual.

The second impressive fact is that they are almost invariably protected from the natural consequences of their behavior by family or by friends. No matter how deep the difficulties, how continuous the insults or the hurts heaped upon relatives, friends, and employers, someone is always running to their assistance to extricate them from tangles with authority or to salvage them from the physical consequences of their excesses. One has only to read the case history of any individual properly belonging in this group to realize that in this respect, at least, they have learned from experience. They know whom to call upon, how to act in order to mitigate or escape consequences, how to wring sympathy and help from others and, in short, how to "get away with it."

Almost every patient in the group of clear-cut psychopathic personality has a past history in which, from the very beginning, we see an ability

to perform delinquencies and aggressions against the rights of others, with only occasional serious repercussions against themselves. The fact that many continue to perform such acts until consequences do impinge upon them has apparently been taken by some psychiatrists to mean that they must continue the behavior in order to secure punishment. This seems a fallacious conclusion, inasmuch as most of the acts carried out by them result to their own advantage for the moment, and as long as they are not punished consistently there is no occasion for them to alter the behavior.* In regard to acts which in themselves produce immediate and unequivocal consequences in the form of pain, such as putting one's hand on a hot stove, these individuals are perfectly able to control their behavior and one never sees them indulging in such acts over any considerable period of time as one may see in certain obsessionals, for example, who, when they have burned themselves accidentally once, have to repeat it three, nine, or even twenty-seven times. Situations in which consequences are more remote or may be avoided provoke the psychopath to activity.

If one observes the records carefully, not only with an eye to antisocial behavior but with a consideration also for acts which are socially approvable, one finds the psychopath indulging frequently in acts of sympathy and charity. A psychopathic girl who inherited a fortune of $30,000 gave away to personal friends who were reported to be in trouble, and loaned to others, the greater part of this money. It was less than half of it that she squandered in a period of three years on expensive trips, clothes, liquor, and other indulgences for herself. On many occasions psychopaths have gone to great lengths personally to help and protect other psychopaths who have been in trouble. That these liaisons almost always terminate in a row and in the disappointment of one or both of the partners is only an expression of the same personality trait.

All of this behavior leads to the appearance of impulsiveness in the conduct of the psychopath; but it is not clear (as Cleckley and others have pointed out) that the psychopath has any stronger or more urgent impulses than anyone else. It does not seem that the behavior emerges so much from the strength of the drive as that it emerges rather from a lack of building in of the ordinary inhibitory controls which enable more normal persons to place a distance of time between a stimulus and the reaction to it. The lack of inhibitory control characteristic of psychopathic personality may be manifested diffusely throughout all the life relationships of the individual and in all departments of conduct, or it may be confined to limited fields of behavior and be manifested, therefore, only in relationship to particular biological urges.

The psychosexual configuration of the psychopath has been much discussed and it has been the habit of many authorities to group with the psychopaths various sexual deviations. Where the sexual field is involved in the configuration of a psychopathic personality, the sexual activity is almost invariably diffuse and diverse and includes auto-eroticism and promiscuity in overt acts of masturbatory, homosexual and heterosexual nature. Not only are the love objects diverse but the sexual configuration of the individual is apt to be poorly integrated so that manual, oral, anal and genital activities are utilized, if not quite indifferently, nevertheless almost indiscriminately. One gets the impression that these individuals have not been subjected sufficiently to the pressures which tend to coerce the majority of mankind into some inhibitory reactions toward tabooed acts. Whereever one encounters a fixed and very limited reaction pattern in regard to sex, one should suspect that the sexual manifestation is compulsive rather than psychopathic in its mechanism. Similarly, in the field of property aggressions one usually finds that they are restricted only to those forms of stealing and swindling, etc., which the individual believes from experience he may be able to get away with. Here again, if one encounters property aggressions restricted to specific classes of object (other than money) or to specific constellations of circumstances, one should suspect that a compulsive mechanism is at play rather than simple uninhibited psychopathic behavior.

It should be kept in mind that psychopathic personality in our view is determined by a single factor; that is, the failure to develop the capacity to restrain a present desire for the sake of a future gain. This lack of development is brought about by a certain type of management of the individual in childhood. It is our belief that any individual subjected to management of the same kind would tend toward failure in development of this trait. It is possible, of course, that heredity could limit capacity to the extent that these controls could not develop under any

*After all the only ones we have opportunity to study are those who eventually are caught. One imagines that there must be some "successful" psychopaths who so adroitly cover their depradations as never to come to official attention.

circumstances and still leave the general intelligence unimpaired. The validity of this supposition is thrown into serious doubt by the successful treatment of the psychopath by Aichorn[1] and Mangun.[6] At any rate it is clear that the psychopathic trend may occur in any of the usual personality types and we, therefore, encounter actually hysterical, hypomanic, depressive, schizoid, and even on occasion obsessional personality configuration, in psychopathic personalities. The variations in pattern manifested by psychopaths depend to a large extent upon these personality configurations rather than upon any difference in the fundamental nature of the psychopathy.

It should be apparent from Washburne's study that individuals with mental ages below ten years (that is, mental defectives of the range of middle-grade morons and below) may be expected to show a similar lack of control due to an inability inherent in the individual to develop the necessary controls. On the other hand, defectives of higher grade may be expected to develop them even though somewhat later chronologically than the average. Where such behavior occurs in these higher grades of mental deficiency, we would consider the personality to be psychopathic, in our sense, provided that the lack of control could not be demonstrated to be dependent upon the intellectual incapacity. It should be kept in mind that the large majority of morons are actually fairly well controlled individuals in these respects and often get into trouble more at the suggestion of others than by themselves.

Our concept of psychopathic personality leads immediately into a therapeutic approach. If we are correct in assuming that the personality defect is due to the fact that the individual has grown up in an environment in which he was to a large extent able to avoid the consequences of impulsive behavior, and if we are also correct in assuming that, barring mental defect or organic brain disease, all individuals who have a mental capacity above the ten-year level have sufficient endowment to develop the necessary controls; then the logic of the situation calls for subjecting these individuals to a training program aimed at repairing the defect. This would call for a consistant disciplinary regimen in which the impulsive behavior would constantly be deprived of success and in which the natural consequences of such behavior would be allowed to impinge upon the individual in every case. It is interesting in reading the case histories of psychopathic personalities (for example, particularly those described by Cleckley[5]) to see how inconsistent in this respect their management has been and what enormous capacity these individuals have acquired for evading or mitigating consequences.

More interesting still we find the presentation of consistent therapeutic management such as outlined by Dr. Mangun[6] at Richmond last May. Dr. Mangun, in dealing with extreme degrees of psychopathic behavior, has been able to correct it by consistent non-punitive therapeutic discipline together with psychotherapeutic interviews. This form of management recommends itself both from the standpoint of its success when applied and from the standpoint of our theoretical basis for dealing with such conditions.

Contrasting with Dr. Mangun's program is that utilized by Aichorn[1] with younger delinquents. He brought about changes of attitude which would permit of training by consistent tolerant acceptance of the child, regardless of its behavior, the therapists never permitting themselves to become emotionally involved in the scenes created by their charges.

Perhaps the essence of both approaches is a refusal to let the psychopath exploit those who surround him while at the same time he is not rejected. In the long run such circumstances might be expected to produce changes in the desired direction. It is certain that aside from these two approaches society has been almost impotent in dealing wtih this problem. Perhaps we are just beginning to understand it.

In the light of all that has gone before it would seem that considering the possession of a psychopathic personality as a mitigating circumstance in criminality, benefits neither the psychopath nor society unless some provision is made for correcting the defect. It should be clear that permitting the psychopath to escape consequences tends only to confirm the character defect by repeating in the formality of the court room the very procedure which, in the informal setting of the home, produced it. Any situation which permits the psychopath to escape from prisons to mental hospitals as insane and from mental hospitals to the community as sane must aggravate the problem. Worse still is the older and more general practice of sending them to penal institutions wherein there is little or no understanding of the problem, and where they are exposed, as it were, to a post graduate course of intensive instruction in antisocial conduct, means of evading consequences, and hatred of authority. A great deal of credit and recog-

nition should be given to the federal prisons in which first steps have been taken toward treatment procedures which can be expected to produce results. The spread of this advance to state and local jurisdictions depends to a very great extent upon the clear-sightedness of psychiatrists, jurists, penologists, and legislators as to the nature of the problem and how best to handle it.

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DISCUSSION (*Abstract*)

Dr. C. W. Mangun, Springfield, Mo.—Dr. Woolley and I, starting from different conceptions of the genesis of psychopaths, appear to have arrived at the same conclusions as to the best method of therapy. If we know how to remedy the condition, possibly we should not be too much concerned about the etiology, except as these views modify our therapeusis.

Dr. Woolley's view, as I understand it, is that the genesis of the psychopath is environmental and due to faulty parental attitudes and control so that he fails to develop the capacity to restrain present desire for the sake of future gain. From my observation of psychopaths in prison and my experience with them in the 300 bed CPI Unit at the Medical Center for Federal Prisoners, I am of the impression that Dr. Woolley's statement fails to take into consideration other well known characteristics. A psychopath is not necessarily a spoiled or only child, but very often is a black sheep among a number of normal siblings. If faulty parental guidance were the causative factor, one might expect that all of the siblings of the psychopath would be psychopathic. Would it not seem more probable that if the parental attitude is different towards the incipient psychopath from the attitude toward the other children who develop normally, that different attitude must be taken because the psychopath is constitutionally different?

Figuratively speaking, the psychopath starts out in life by kicking the slats out of his cradle. Ordinarily he has distinguished himself by unusual conduct from the time he has had capacity to assert himself. To my mind, it is difficult to conceive of temper tantrums and breath-holding in an infant as being conditioned upon faulty guidance by the parents. Infantile asthma, persistent enuresis, and frequently found subcyanosis of the extremities are characteristics which, to my mind, suggest neurotrophic disturbance. Entirely apart from the psychopath's insistence upon immediate satisfaction of his desires; even in the presence of a very superior tested intelligence, his thinking is superficial and his judgment impaired. He may never have held a job for as long as one week in his life, but he is cock-sure that he is through with crime and that it is a simple matter for him to lead a stable life upon his release from the institution. He feels that he is a big-shot and will make a huge success of some enterprise which has caught his momentary fancy. As a rule he has given little, if any, thought to the necessary financing or other details which must be arranged. As one father stated it: "My son has the mind of a child," and yet his son tested a very superior intelligence. This judgment defect is more than discounting the future for present desire; but is commonly characterized by excessive, unreasonable, and illogical demands for both present and future. A considerable percentage of psychopaths are pathological liars who often falsify for no apparent purpose of gain.

The psychopath is like the thief being pursued down the street who points ahead and cries "stop thief" to divert attention from himself. We are prone to take him at his pathologic word and look for the fault elsewhere, when it is to be found within himself. If poor parental control were the determining factor, there should be more psychopaths than there are. Many criminals appear to come from inadequately controlled home situations, but they are not psychopaths. They make good adjustments to prison routine, are capable of persistent productive effort, and are stable and calculating in following out a course of action. The psychopaths I see are all delinquents; most of them are habitual criminals. But in spite of good intentions and the best resolutons are soon again in trouble because they appear incapable of doing otherwise.

Many psychiatrists appear to hold the belief that if a defect is constitutional it is irremediable. I have never been able to see how such a conclusion could be justified. We know that animals which are traditional enemies may be trained to become friends and their behavior patterns greatly modified. Psychopaths tend to mature emotionally and intellectually as they reach mid-life, and our therapy should assist in hastening this natural process of maturation. In practice it amounts to re-education. It is to me gratifying that Dr. Woolley has arrived at this same therapeutic method although approaching the problem from a premise differing from mine.

In our institution we have all grades of psychopaths, from the most vicious type of individual to those who are quite tractable. They are all trouble-makers because they have been trouble-makers in the usual institution. We have a very good custodial set-up and we are able to quarter them in individual rooms that are furnished with complete facilities, so that we can exert any degree of control of the psychopath that we find desirable.

Dr. H. M. Cleckley, Augusta, Ga.—One of the most confusing things in the literature about the psychopath has always been the tendency to group heterogeneous personality types under this category and to group types so diverse that one could scarcely form a coherent idea of what was meant by the term. I agree thoroughly with Dr. Woolley in excluding such cases as schizoids, neurotics, and sexual deviates, from this particular group which seems to me to stand forth in a very clear pattern, although a very difficult one to define.

I also agree with his point, that an important difference between the psychopath, or so-called psychopath,

and other people, is his inability to forego immediate pleasure or to forego reacting immediately to a stimulus, even a slight stimulus, that might be called pleasurable in order to gain some important end in the future or to attain important goals.

I feel like trying to go one step further and saying why I think he does not apply the brakes and why he is unable to forego these immediate reactions. I believe his failures here result from the fact that the future gain or the goal, the reward for which most people are willing to resist immediate trivial stimuli, means so little to him that he does not find it worth while to apply brakes. In saying this, of course, I am saying something that I cannot prove. I suppose none of us can prove what any experience or any goal means to another person, but one does get the feeling, and a very strong feeling in my own experience, that the goals and rewards of healthy living do not matter much to these so-called psychopaths. They consistently impress me as persons who have no first-hand or "emotional" appreciation of human living and who, despite their verbal cleverness, are suffering from a psychosis at semantic levels. Is it because they fail to apply the brakes for a long period of time and seldom reach any far goals or important goals, that they never learn to experience important pleasures? Or is the other loss primary, the inability to evaluate and experience life? I think such questions are often argued somewhat as one might argue about whether the hen preceded the first egg or vice-versa. At any rate I feel that Dr. Woolley's point is a fundamental point, whether or not one tries to go further and say why the psychopath cannot try to apply the brakes.

I also think that the point raised by Dr. Woolley about the defect in training and the contribution of environmental factors to the production of this personality picture is a most important one. I do not think that one should say that there is no constitutional factor involved. The glib tendency, however, to assume a constitutional defect in these cases and to explain all their maladjustment on this hypothesis impresses me as not only rather fanciful but an unnecessary and gratuitous exercise of defeatism. Persistent and careful study of the environmental forces of the influences that have played a part in the personality development sometimes enable us to get a clearer and a more cogent picture of what makes the psychopath behave in this way and perhaps in the future will guide us to plan some form of effective therapy.

Some psychopaths show environmental factors in their early history that seem to explain, or at least throw much light on, the pattern that they act out later. If one could go more deeply into the study of their past reactions to experience I think it not unlikely that one would regularly find in dynamic factors an explanation of their failures. I also think that when we say these psychopaths very frequently were not taught control, we do not naively mean that they were necessarily spoiled or treated in a uniformly lax fashion. I have seen many who were treated with what most people would consider too much severity and who revolted from authority. One also finds cases in which parental severity was so injudicious and indiscriminate that the subject apparently decided not to pay attention to any control because he was controlled severely and foolishly on minor points or punished with little consistency.

Dr. William Nelson, St. Louis, Mo.—Most psychopathic personalities have characteristics more or less that pertain to the hysterical type, the schizoid, the manic-depressive, and the other so-called affective types of personality. Separating the psychopathic personalities from all other personalities, is a very difficult thing to do.

It is very unfortunate that we have this difference of opinion in regard to whether the psychopathic personality has a psychosis or has not. To me it is pretty much the same as saying that a schizoid personality is a personality that is not a psychotic personality and the manic-depressive personality is a personality of manic-depressiveness without psychosis. Certainly the term, psychotic personality, cannot determine the individual's responsibility.

From the standpoint of the therapy involved it ought not to make much difference whether constitution participates as well as environment.

Dr. S. B. Meyerson, Chester, Ill.—I understand that Dr. Mangun considers the psychopathic personality as being basically an immature personality which tends to become mature emotionally and intellectually with the passing of years. I should like to ask Dr. Mangun, as a prison psychiatrist who has to advise the prison authorities as to the mental status of the prisoners and as to their capacity for adjustment in civil life, what criteria he uses in determining when the psychopathic prisoners have attained such maturity and are ready to be released.

Dr. Mangun.—Unfortunately, we are not given the opportunity of deciding that matter because the men are sent to us by order of a court for a definite sentence and when that sentence is up we have to let them go. In certain instances we may control a man's tenure by our decision as to whether he has earned good time or as to whether he can be released on the minimum release date, or he may be paroled. Our recommendation may be effective in those instances, but in general we have to keep the man for whatever his sentence is and then, regardless of the state of the therapy or his apparent condition, we have to let him go. Our criterion as to when a man has recovered, whether after release or during our control of him, depends on his reactions, on how he gets along and on how he demonstrates that he is able to control his conduct in a reasonable, logical and sensible manner. That is the only criterion we have to go by.

Dr. C. M. Speck, Whitfield, Miss.—In our state the law says that we cannot keep psychopathic personalities in our institution. If they are not psychotic, we are supposed to discharge them. The courts will not convict them for their petty crimes; so they constantly send them back through an old jury commitment procedure, and they remain in the hospital until they come before the staff again, which is about two weeks. The staff invariably sends them back to society. They continue to commit these petty crimes, and the authorities will not convict them.

Being the superintendent of a hospital of over 3,500

patients, I realize the trouble that these psychopathic personalities give to society as well as to the superintendents of different institutions. In our institution, they are admitted perhaps five or six times during the course of a year, which requires a lot of expenditure; and when we turn them out, some member of the legislature will call us up and say that the patient is crazy and ask us to keep him in the institution. Then the staff comes along, saying that he is not psychotic, only a delinquent patient, so we let him go again.

I am not a psychiatrist, just a student of psychiatry, and I hope that some of you who know psychiatry will decide whether or not these patients are responsible to society for their acts and deeds.

Dr. Woolley (closing).—The mere fact that the psychopath develops behavior of a certain kind indicates that there is a constitutional capacity to develop it. As long as he is a psychopath he has not manifested the capacity to develop any control over it, but in certain situations he does develop control over it, as we are able to demonstrate by therapy in various places.

I should like to remind Dr. Mangun that parents do not treat any two of their children alike, and the dynamic situations between children in a home and between parents and their children are very complicated things. It is certainly quite evident to anyone who works with children that enuresis and tantrums and holding the breath and asthmatic attacks even in very young infants can be determined and controlled very often by parental attitude.

Dr. Cleckley remarked that the goal does not seem to mean very much to the psychopath. That may be true, but at the same time, I should like to point out that the psychopath very often not only eats his cake, but has it, too. He takes the satisfaction of the moment, risks the loss of the future, and then talks the public out of punishing him, and that is what happens with all these persons who go to Dr. Speck's institution. They have eaten their cake and they have gotten into prison and out into the community again with the minimum of difficulty.

Now the answer to that question is the answer that Dr. Mangun has given to it in the prison which he serves as psychiatrist. It is certainly not in letting the psychopath escape from the prison sentence, and I think that the psychopath should not be considered to be insane. I think the psychopath should be considered sane. He should be sentenced perhaps for a long time, but not to just any prison, because going to most prisons simply gives him a postgraduate course in ways of aggression and skills of evasion and hatred and anger toward authority. He must go to a prison conducted with departments of psychiatry that understand and are able to handle the problem of the psychopath very much along the line that Dr. Mangun has instituted.

The psychopath can learn. The one hope of therapy for the psychopath lies in the fact that under proper training conditions he can learn; and the reason we have so much trouble with him is that we have very rarely subjected him to conditions which would tend to train him.

A MENTAL HYGIENE PROGRAM IN THE STATE HEALTH DEPARTMENT*

By ARCHIBALD M. GAULOCHER, M.D., NP.†
Montgomery, Alabama

The inclusion of a mental hygiene program under the auspices of the State Department of Health was suggested at the founding meeting of the National Committee for Mental Hygiene in 1909. Alabama is one of the few states that has made provision for mental hygiene work. The other states are Maryland and Connecticut. Nevertheless, public health departments the nation over are beginning to show a keen interest in the maintenance and protection of mental health. The United States Public Health Service unobtrusively has done much to improve the standards of mental hospitals and, aided by its keen foresight and assistance, great strides will be made in the broader field of mental hygiene. After all, mental hygiene is not a subject of mere academic interest. It is a matter of tremendous importance, especially in these critical and uncertain times of world unrest.

One is apt to be embarrassed when asked to give a neat definition of what is meant by the now well-established term, "mental hygiene." Vagueness is enhanced by changing concepts. Originally, the idea was the prevention of insanity and mental deficiency. Extravagant claims were made which, failing of materialization, tended to discredit "mental hygiene." Fortunately, during the last fifty years our knowledge of medical psychology has advanced tremendously, and with it there is an entirely new interest and understanding, not only of the insane but of the normal as well. Suffice it to say that, as a result of better understanding and wider interest, mental hygiene has become a positive program whose aim is to relieve the burdensome and often crippling handicaps of people that are not necessarily potentially insane. They are helped to lead wholesome, happy and productive lives. At the same time, a better understanding of the emotional life may be imparted to parent, teacher, attendance officer, social worker or others interested in mental hygiene. Incidentally, they in turn play an im-

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portant role in the successful outcome of treatment procedures and preventive measures.

Mental hygiene also represents an attitude toward mental illness and abnormal behavior and delinquency. For example, until Healy showed its vital importance, no one thought of getting the delinquent's own story of his view of life. Understanding motivations, of course, does not mean excusing anti-social conduct. It should be stressed that mental illness is the result of causes. These causal factors can be discovered and treatment is successful in a high percentage of cases. In general, children and young adults respond more quickly and make better adjustments than adults and certainly, if we help the child, his chances of leading a normal adult life are much better. Hence, in mental hygiene programs treatment of maladjusted children and adolescents should be stressed. The treatment procedures differ from those employed in general medicine in that not only must the child be understood, but the parents, too, must be considered, and this latter task falls to the psychiatric social worker.

The need of mental hygiene programs of statewide scope is recognized by most physicians. The problem is how to meet this need in a practical manner. Experience during the past twenty-five years has shown that the first step is the establishment of clinics, because there is little point in stressing treatment unless facilities are available. The matter of personnel: psychiatrist, social workers, psychologist and clerical help, is well discussed in various publications. In other words, the mechanics of clinics follow fairly well-established patterns and present no unusual problems. The real difficulties come from other sources, and unless these difficulties are recognized and met, the clinic service may be seriously hampered or even discredited. We shall now turn our attention to these sometimes subtle but always very real problems to be encountered in the establishment of mental hygiene clinics. What follows is meant to be of general application and is not a description of Alabama.

First and foremost to be considered is the attitude of the community toward the work of the psychiatric clinic. A fairly good idea can be had from the way it behaves toward children and their problems in schools, courts, and provision for recreational facilities. If there is little understanding of the emotional needs of children, the functions of the clinic will not be understood. On the other hand, the community may ascribe magical powers to mental hygiene and expect social problems lying entirely outside the field of the clinic to be solved. In these communities, a diagnostic clinic or consultation service will best meet their needs, especially if combined with an educational program.

The average person and even physicians have misgivings about psychiatrists and often jokingly question the psychiatrists' sanity. This, of course, is mankind's expression of fear of his own instinctual drives. Fear of the psychiatrist, awe of the mentally ill, and the search for the physical cause for all illness causes resistance, although to a lesser degree as time goes on. Psychiatry itself has undergone a reorientation. There are many psychiatrists who do not treat the insane but, with their knowledge of medical psychology, straighten out the emotional difficulties of normal persons. The work of the psychologist is apt to be over-evaluated because he uses so-called scientific tests which, though important, are only part of the story. There are no valid standard tests of personality.

Another misunderstood person is the psychiatric social worker, at one time a sort of clinic receptionist doing various odd jobs, including obtaining case histories. History gathering is still an important function, but far more important is the work with parents, helping them to understand the child's emotional attitudes. This worker also contacts other agencies in efforts to better the child's environment. Her work is supervised by the psychiatrist.

The selection of clinic quarters requires thought and planning. Space in a ramshackle building in a very poor neighborhood stigmatizes the clinic as a place for the treatment of the so-called underprivileged. Quarters in schools, courts, and hospitals tend to identify the program with the institution. Needless to say, the feelings of the child client must be considered, and why add to the difficulties of an already fearful child? Two things, then, must be considered: the effect on the young client; and secondly, the reaction of the community. One gets a pretty good appraisal of a community's esteem of child guidance when it selects a tumble-down building for the clinic. It is as much as to say, "That's good enough for that sort of work." Perhaps, too, it represents an attempt to hide a poorly understood and half-accepted service.

The relationship of the mental hygiene unit to the health department and to the other de-

partments needs frank interpretation if cooperation is to be gained and friction avoided. In the first place, the aims and methods of a newly established unit must be made as clear as possible to its own department. Even so, there will be skepticism and the argument that there are so many other things far from being adequately met. In a restricted sense, this nevertheless, is mental hygiene. We know, for example, that hookworm infestation often has a pronounced effect on the mental activity. Pellagra is an even more striking example of physical and mental interrelationships. But aside from these special cases, mental maladjustments exist without discoverable physiologic dysfunction. The needs of people are many and concurrent. Fortunately, most health officers recognize the need of mental hygiene and are willing to cooperate in every way.

The welfare agencies have always been interested in mental hygiene. Often their client's plight is due in some measure to emotional maladjustment. A neurosis often prevents gainful employment. All trained social workers have had courses if not actual experience in medical psychology. Adolph Meyer is credited with the introduction of the psychiatric social worker, and this is probably one of America's great contributions to psychiatry. Traditionally, there is every reason for collaboration and understanding. The social workers as a professional group are invaluable in interpreting and extending the work of the mental hygiene unit. The same may be said of the public health nurse, although until recently nurses received little training in mental hygiene.

Another important professional group interested in mental hygiene is the teaching profession. One seldom picks up a teachers' publication without finding some article on this subject, and in some large cities a mental hygiene unit is maintained by the school system. Most of the patients referred to a mental hygiene clinic will be school children, and obviously much can be accomplished once the whole-hearted cooperation of the school is obtained. One hopes that teachers will gain a greater appreciation of the emotional life of the child through discussions of cases referred to the clinic. Naturally the psychiatrist cannot take an authoritative role, but as a consultant he can be of great assistance. There is more to teaching than the three R's. The mental hygiene unit's greatest service to the teaching profession will not be the treatment of a few problem children, but the imparting of a point of view that will assist them in developing a better relationship with their pupils. In turn, when the emotional needs of the child are appreciated, more attention will be given to the recognition of the maladjusted.

No blue print for a state or community mental hygiene program can be offered, but the mental hygiene unit in the state health department will gain much by collaboration with the state educational department and the state welfare department. In general, the emphasis is on cooperation, not only in the departments named above, but with all agencies that may gain by the contributions of mental hygiene. In this connection, the attitude of the mental hygiene division is not to show other departments or agencies how to do their work, but to offer the division's assistance when an agency recognizes the need of this help.

The permeation of mental hygiene principles in the community is slow at best. It will be still slower if the public conscience is not well developed. A mental hygiene program is a long-term endeavor. One will find little if any active resistance that cannot be overcome by interpretation, but great difficulty will be met with a passive form better known as indifference. Appeal to reason is of less importance oftentimes than one would suspect. In fact, it is inconsistent because we know the intimate tie-up of intelligence and emotion. This brings us back to the idea of setting up clinics first. A few successful cases will certainly be more convincing than any amount of publicity extolling the benefits of mental hygiene. A delinquent youth helped to decency and useful occupation; a neurotic boy relieved of his helplessness and returned to school; the appearance of a pleasing personality in a previously mean and troublesome child; these will not be overlooked. These results are all the more convincing to the persons most concerned with the problem, since they contributed to the study and treatment in a cooperative effort with the clinic.

One thing is certain, the sailing will always be against the wind. This is nothing new in public health work, but delving into the emotional life can be far more painful than an impersonal inoculation. Success can only be measured in relative terms, no doubt to the annoyance of the statistician because he considers the individual only as a totality in birth and death statistics. Be that as it may, we are concerned with protecting the health of people, and we

cannot be content to shield them from disease entities only to see many of them fill our state hospitals or go through life as mental cripples. This does not imply that Utopia is in sight, but certainly public health departments cannot sidestep the challenge of protecting mental health.

DISCUSSION (*Abstract*)

Dr. Theodore A. Watters, New Orleans, La.—Our concepts in psychiatry, as in all other branches of medicine, have changed. There was a time when the psychiatrist was content to work in a state hospital and confine his efforts to those who were incarcerated therein. This is certainly not true today with modern workers. It is a matter of individual attention, facing the facts for a particular patient, and not adhering to old textbook formulations.

There was a time when medicine was quite pleased to make the diagnosis of consumption. Nowadays, almost anyone, if he follows a man down the street and sees that he is rather pale, thin, and anemic-looking; and if he expectorates blood-streaked sputum on the sidewalk, would assume that he had tuberculosis. The same is true with dementia praecox. There was a time when we were quite fatalistic about it; said that all hope was gone for the person. We sent him to a state hospital and proved to our satisfaction that he would deteriorate.

This is not true today. Our present day concepts enable us to recognize that throughout our social fabric there are schizophrenic personalities who are making worthwhile contributions to society. Some of them are in universities, some in the profession of medicine, some hold other dignified positions, but they are schizophrenic personalities just the same. It is only when they come into conflict with the mores in which they live, those regulations which are called rules of society, and develop either social tendencies or anti-social behavior which creates situations such that others do not want them around, that we have to do something about them. Many schizophrenic personalities do not develop such behaviour, so we have to accommodate ourselves to the fact that modern workers in psychiatry consider personalities and potential disorder rather than disease alone. Today it is not just a matter of sending advanced cases "off," but rather dealing with personalities that may or may not become disordered.

Regarding the question of the child: we should not overlook the fact that all great religions and all great political schemes focus on the child, because it is in that formative period in the human being's life that things can be done to determine his development to their being. Any scheme of psychiatry, whether it be in the state board of health or anywhere else, certainly must be concentrated on children and adolescents, because as I have said, they are in the formative period. Something can be done then, so we should plunge in and do it.

Any child who comes to a physician in this work is a part of a constellation that we call the family, consisting of father and mother and child number one and child number two, with emotional relationships between these respective members of the family.

In addition to the family constellation, we deal with situations: we deal at times actually with neighborhoods and communities. So the good that we may do the child will be reflected in his family and in the neighborhood in which he lives.

So to me the opportunities that parents offer for rectification of problems are vast. And one opportunity that I think of is this: the opportunity thus afforded to create more good will towards the psychiatrist.

There is a difference between treatment and management, and in some cases we have to put less emphasis upon treatment and more upon management. We may actually become the manager of a personality and remain so for a good many years.

As to the question of sex and alcohol: I, for one, refuse to put medicine on the spot there. I do not believe all problems of sex and all problems of alcohol are specifically medicine's responsibility. People in other professional walks of life simply have to plunge in and help us. Anyone working upon these problems has to solicit the help of lay workers: the business man, the lawyer, and that will-of-the-wisp that we call the politician. We must face the problem of sex and alcohol pragmatically.

We always run into allusions, such as that a psychiatrist has to be a bit "screwy" himself. In some cases most surely our colleagues may be queer, but in other cases, I find that many of our modern workers are not only sane, but also sensible fellows.

We work nowadays largely with normal people. Occasionally I have had someone come to my office who is disturbed over the fact that he is going to a man who works with "crazy" patients. Usually I take him to a window in my office, which overlooks the city of New Orleans, point out to him that many people who consult me are working in those offices downtown. Many of them are professional workers. So it is a far-removed proposition today from the old state hospital psychiatry of days gone by.

The psychologist is a highly trained, highly educated lay worker. I think we should be fair to him. He is of extreme value to us in this work. I hope I shall never have to run a clinic without one. We have an obligation to him.

But I believe organized medicine should take a stand whereby it can determine just whom we are going to have in this field of work, and what the criteria for his training should be, and to help him determine for himself his relationship with us. I am thinking particularly of that point where counseling ends and treatment begins: a practical question for us.

Now, the questions of tests: many persons say, "Oh, those psychological tests. That is just a lot of ballyhoo." Some of them are, but so it runs with all tests in medicine. I do not know one that is fool-proof and thoroughly valid. All the things that have to do with testing a situation are not valid in themselves, else it would not be a test.

Now, the question of social workers: I have had a very enjoyable relationship with social workers. Social work is the daughter of medicine. Organized medicine was the father of social work. It is true that we have a lot of Meddlesome Matties; however, we have them in everything else. Our problem is to work with those who are helpful, and avoid those who are harmful.

We have the same difficulties with psychologists. If we recognize our mutual problems and solve them, then it will be to our mutual credit, and not to that of someone else. We have to regard this as a neurotic faces

his problems. He either faces his problems realistically, does something about them, and solves them; he compromises with them; or he avoids them. I think medicine is in the same position. We have to face the problem of social work realistically, and solve it.

The question of quarters for the unit: I am reminded that in New Orleans our politicians built a thirteen million dollar institution but did not put a psychiatric unit in it. It is a reflection of the public's attitude.

Now the question of having privies first: I was in Mexico this summer looking over some of the mental problems they have there, visiting private and public hospitals, and medical schools. One of the physicians told me we had better solve smallpox and typhoid fever first. I hope they do solve the problem of smallpox. It makes a terrible situation there. But if you do not work on people's minds while you work on their bodies, you are not going to get very far. The best evidence of this is in our country today. We have an army; we are building its members up physically, but we had better get busy about morale.

Now, as to the place and type of work for a mental hygiene unit in a health department: those of us with an open mind can realize the need and its place. Anyone who is doing good work and rendering proper service will be recognized. There is a cultural pattern in American civilization that is based on the fact that good service will be rewarded. We expect and demand good service.

Dr. Victor Hugh Vogel, Washington, D. C.—When the office of Consultant in Mental Hygiene to the States was set up in the United States Public Health Service eighteen months ago, Dr. Baker's request was the first which it was my pleasure to follow up, and the Alabama program is the first one to be set up with our assistance. Consequently, I have followed this Alabama program with a great deal of interest, and I regret that Dr. Gaulocher's paper today did not deal more with the nature of the program.

I wish to read a paragraph from a recent talk Dr. Baker gave over an Alabama radio station. Speaking of the unfortunate prejudice and stigma which attach to mental disorders, he said:

"The embarrassment which, unfortunately, is still involved in cases of actual insanity has no place whatsoever in the broad field of general psychiatry. Although it seeks to restore to full mental health the victims of extreme mental disease, that is only a relatively small part of its function. To limit one's conception of psychiatry to its work with the insane is as far off the mark as to think of maternal hygiene entirely in terms of saving the lives of women suffering from serious puerperal diseases. Just as the State Health Department's activities in the maternal hygiene field are concerned mainly with assuring proper medical and nursing care for all mothers and avoiding those abnormal conditions which endanger the lives of mothers and babies, so its mental hygiene program is concerned primarily with the emotional and adjustment problems of normal people, mainly children. There are times in the lives of practically all persons when guidance and advice of this kind would be a tremendous help."

There are at present about eight states which are budgeting money for mental hygiene as such. A closer perusal of the items on the budget shows that something like twenty-two states are budgeting money for projects which are essentially mental hygiene. I believe this is encouraging and shows what the trend is in this field.

The Public Health Service, with the assistance of Johns Hopkins University, has arranged a course which has started this year in mental hygiene—public health. So far as I know, it is the first of its kind. This course is training men for work in this particular field. It is taking men with a general background of psychiatry, giving them some of the essentials of public health, and a great deal of child guidance work and mental hygiene clinic management and educational functions.

There is under consideration a similar training plan which contemplates giving public health nurses post graduate psychiatric social work. I have until recently told health officers that psychiatric social workers were absolutely necessary in a mental hygiene program. Perhaps carefully selected public health nurses with post graduate work in psychiatric social work can supply the need.

A perusal of the state budgets shows that one-tenth of one per cent of the money budgeted for public health in this country goes for mental health. This does not include some money which is going for mental hygiene under other names, but it is much too low when you consider that mental health problems are responsibile for over half of all di ability in this country, and for more than half of all hospital bed occupancy in this country.

Dr. Horton Casparis, Nashville, Tenn.—I want to urge again, as I have many times before, that we change the name of this subject from "mental hygiene" to "mental health." The very people who in general need these benefits or who need to assume much of the basic responsibility for the work, will accept the familiar term "health," but find "hygiene" too vague and nebulous to fit their willingness to participate.

In the previous paper we heard Dr. Tucker use the word "hygiene" in its present commonly accepted sense, when he spoke of the hygienic measures necessary in the control of the hookworm. Now I do not believe we really would use this same term "hygiene" in describing a child's mind or attitude. It is not "hygienic" or "unhygienic," but on the contrary, it is "healthy" or "unhealthy," just as the attitude or behavior of the stomach toward food is "healthy" or "unhealthy."

I do not quite agree with the statement that some day we shall get used to mental disease just as we have gradually to certain physical diseases. Because, if the mental disease is functional then it is largely our fault and more or less an insult to our own conscience with which we have to live fairly peacefully. While on the other hand, in the case of physical disease, such as tuberculosis or syphilis, it is much easier to "pass the buck" and blame some one else (even the germ causing it) at least to the extent of making peace with our own conscience. For example, in functional mental disease we cannot conscientiously blame things or other people for our mental inadequacy, so we must subconsciously "alibi" in order to protect our conscience and self respect.

I hope the establishment of mental health set-ups in health departments will proceed slowly. This problem is not going to be solved by setting up a bunch of clinics. The first essential is personnel training or sensitization of those already on the staff and already making hundreds of contacts, to the fact that they can do more real preventive work in this field than could probably be accomplished in any number of special clinics for this purpose. The reasons for this are that this should

be an indissociable part of one's everyday work to be effective, and should be woven into the fabric of every contact by all health workers. Also, if a special clinic is established then almost invariably it becomes loaded down quickly with children and adults already in trouble (mentally sick), many of them so far along that most of the effort can easily be used up on a relatively few more or less hopeless wrecks. Such a clinic usually becomes a treatment clinic and does preventive work only in the broader sense of trying to keep people who are already in varying degrees of mental trouble, from getting in worse trouble.

Thus, only occasionally can such a clinic be justified, and that is, in my opinion, when it functions for diagnostic, demonstration, and/or teaching purposes. We should not get the idea that organizing clinics will do the job. They look good and sound good, but they are usually attended only by those who need treatment, and the truly preventive work is going to be done in the home, in the school, in the child and maternal health clinics, in the doctor's office, by the nurse, by the doctor, by the teacher, by the parent, for those chiefly who do not yet realize or fully realize that they need this sort of help.

Dr. Gaulocher (closing).—I wish to emphasize the importance of the mental hygiene units' cooperation with educational institutions. Teachers and social workers in particular have much gain from a working knowledge of mental hygiene.

In Alabama, the colleges throughout the state showed an immediate interest in mental hygiene programs. In one college, lectures on medical psychology as pertains to social work are given.

Probably it is much more important to have a great number of persons interested in mental hygiene who have a basic understanding of the subject than to have a few specialists in clinics. Of course, there are so many angles to this type of work that you could not hope to cover them all, but certainly a program of this type is a step in the right direction and will bring gratifying results in time.

MEDICAL PHASES OF INDUSTRIAL HYGIENE*

AS RELATED TO THE WORK OF HEALTH DEPARTMENTS

By JAMES G. TOWNSEND, M.D.†
Bethesda, Maryland

Public health in the southern states has been in the field longer and in many ways is more fully developed than in any other single section of the country except the northeast. During the years preceding the Social Security Act, the cooperation of southern states with the Public Health Service laid the foundation for the Federal-state partnership which is advancing public health work throughout the country.

It was in the South that early sanitary surveys were made in rural areas. I remember taking part in these surveys back in 1916 and 1917, and I know it was that first public health reconnaissance work which marked the beginnings of a full-time rural health service throughout the country. And under the Social Security Act, North Carolina was the first state to set up an industrial hygiene unit in its health department.

But many of us have neglected or minimized the challenge to our profession raised by the increasing industrialization of the South. Industry has been moving southward since the last war, and national defense has accelerated that movement.

This tremendous industrial growth concerns every one of us because it is taking place in a region already burdened with more than its share of public health problems—a region in which we are still counterattacking malaria, syphilis, pellagra, hookworm and maternal and infant mortality.

National defense has thrown southern industrial expansion into high gear, drawing many thousands of workers off the farm into the factory. New people are coming by the hundreds from out of state to work in southern plants and shipyards. As the total number of workers has skyrocketed, there has been a parallel increase in the number liable to industrial hazards.

Additional industrial health problems have been raised by three factors: first, the dilution of the industrial population with less vigorous workers—women, older men, and youths; second, the problem of fatigue, as production lines speed up into high gear; third, overcrowding in factories having to expand production under pressure without time for parallel plant construction.

Last year the time lost by workers staying home from the job because of illness added up to four hundred million wasted man days. Enough men and women were off their feet and off the job to close down, in effect, a thousand factories each employing a thousand workers. What can we do to reduce this staggering loss of wasted manpower?

Before answering that question, we must realize that this time-loss results from two kinds of disability. First are the diseases and injuries common to all of us—influenza and heart disease, automobile accidents, falls, and burns. Second are the injuries incurred on the job and the

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†Medical Director, Division of Industrial Hygiene, National Institute of Health, U. S. Public Health Service.

diseases caused by exposure to toxic substances used in manufacture.

The Public Health Service is cooperating with state and local agencies, industry and labor, to promote the general health of workers as well as to make every job a safe job.

There are thirty-four state industrial hygiene units, two county and four city units, as well as units in Hawaii and the Philippines. Sixty-four cents of every dollar they spend comes from the Federal Government. This proportion, I might add, is changing, because the Federal contribution is dropping annually as the states and cities assume greater financial responsibility. With the four exceptions of Arkansas, Florida, Louisiana, and the District of Columbia, every state represented in the Southern Medical Association has an industrial hygiene division. Arkansas and Louisiana have already taken the first steps toward the establishment of their programs. In addition, the county of St. Louis in Missouri and three cities, Louisville, Baltimore, and St. Louis, have separate units.

The work of these units is the most direct contribution to all-out defense that public health is making today. Wherever an industrial hygiene service reaches, defense plants are being surveyed and hazards eliminated. The blueprint calls for investigations of existing plants; recommendations affecting the construction or expansion of plants; promotion of medical services for workers; and education of management and employees. With this blueprint, we are building a lasting structure of time-saving, money-saving, and life-saving service.

Behind this four-fold program stands a generation of public health service research and experience in its application.

If every plant had an industrial health maintenance program,[1] and if every state health department had a comprehensive industrial hygiene service, then our problem today would not be so difficult. However, recent studies made by the United States Public Health Service in a large number of industrial establishments, as well as those conducted by the National Industrial Conference Board,[2] indicate that medical services are still far from benefiting more than a small proportion of the industrial workers of this country. For example, the Public Health Service found that only 15 per cent of the employees were provided with the services of a full-time physician.

The medical services available in small plants which employ five hundred workers or less are proportionately diminutive. In these plants eight of ten workers can count only upon catch-as-catch-can treatment because medical services are lacking.[3] We may assume, therefore, that the bulk of our gainfully employed, when in need of medical services, receives them from the private practitioner on a part-time basis at the plant, from "on call" physicians, or from the family doctor.

This is especially true with reference to the so-called non-occupational disabilities. The National Industrial Conference Board study showed that in one-third of the plants surveyed by them, no efforts were made to supervise non-occupational disabilities, in order to assure the worker of medical attention. This study also showed that in only slightly more than one-half of the plants was an effort made to promote employee health through educational means, and that only casual supervision was practiced with regard to working conditions.

Here is formidable challenge for every member of our profession.

When an industrial hygiene unit comes into a plant, three men—a chemist, an engineer, and a doctor—analyze the efficiency of existing health safeguards, and decide on the necessity for new ones.

The chemist acquaints himself with the specific materials used in the plant. He determines which of the substances constitute potential or actual hazards to health. He is aware of the wide range of toxic exposures in manufacturing procedures. He knows that almost three million American workers are on jobs where organic dusts are potentially dangerous; jobs where by-products like carbon monoxide may reach dangerously high concentrations. Defense industries have called upon many solvents ranging through toluene, benzols and the glycols—to name only a few. And these must be guarded against. In a thousand operations, several million workers handle chemicals which produce dermatoses. Let me briefly list a few other common exposures: a half million men work with lead and its compounds; a quarter million handle sulfur dioxide; a hundred thousand are exposed to chromium. And so it goes.

The engineer, in the meantime, has been examining ventilation, lighting, safety equipment, workbench space and mechanical fatigue hazards. He must also plan for mechanical control of toxic exposures.

Armed with the facts and figures supplied by the chemist and engineer, the doctor checks the

physical condition and clinical history of every worker in the plant. If there is a medical service in the plant, he works closely with the physician in charge. He advocates the pre-employment examination, regular examinations on the job, and careful maintenance of absentee records.

These three men pool their observations. Are newly-used chemicals exposing the workers to dermatoses? The chemist suggests non-irritating substances or methods of control. Is the light poor, is there a high concentration of dust or toxic fumes in the air, is it too warm and too dry? Our engineer's job is to solve these environmental problems for every individual plant he enters, in terms of that plant's specific needs.

The doctor's job is perhaps more complex than his co-workers'.

Once the chemist's and the engineer's recommendations have been carried out, constant vigilance must be exercised to keep safety equipment at peak efficiency. Small, hard-to-detect breaks in, say, an exhaust system may occur. And it is the doctor who first recognizes the storm signals as they show up in headaches, fatigue, mild stomach disorders, unexplained nervousness, a sudden drop in the blood count. He sees the first results of ineffective control in his routine examination of the workers before the break can be corrected.

Adult health maintenance challenges him further on two fronts: first, the individual physical fitness of the workers as employees in a particular plant; and, second, the well-being of these men and women as members of families and of the community.

The first consideration involves sanitation inspection, rehabilitation recommendations, routine physical examinations, and proper placement analysis. Such analysis, before a man gets his job as well as after he is assigned to one, emphasizes the importance of the psychiatric approach to industrial medicine. Wear and tear on both individual and payroll are minimized if square pegs are not assigned to round-hole jobs! Studies[4] conducted in specific industries have shown the incidence of such diseases as tuberculosis, pneumonia, and degenerative conditions to be higher than the average for the entire industrial population. There is evidence to justify the opinion that deaths from tuberculosis can be reduced 50 per cent by health supervision of workers in occupations predisposing to the disease, by detection of minimal cases and by provision of adequate medical and institutional care in the early stages of the disease. In a majority of cases the disease is discovered too late in its course for the most effective treatment.

Surely the tuberculosis service of the health department should be as much concerned with this group of employed adults as it is with routine follow-up of contacts and tuberculin testing of high school students.

It is also known that mortality and disability from pneumonia are excessive among workers exposed to extreme and sudden changes in temperature, bad weather, and toxic gases and dust.

This viewpoint of the close connection between cause and effect, job and illness, is what we might term the "occupational approach" to public health. And this brings me to the second consideration every public health physician faces. He knows that although sickness and death due to hazards on the job may be impressive, these account for only 10 per cent of the industrial time loss. The other 90 per cent of lost time is due to disabling non-occupational diseases.

A worker's health is as much a product of his home surroundings as his shop environment. Industrial health and public health are like the parallel lengths of a ladder, connected by many rungs all the way down the line.

The most important rungs of this ladder are the usual services rendered by a health department to its community. The venereal disease clinic, the nursing service, the sanitation section, and the maternal and child health service must reach the industrial worker and his family to a far greater extent than mere routine functions permit. The industrial hygiene unit has a close, informed relation with management and employee and therefore is the logical channel through which these services can reach the worker.

The local health department, correspondingly, is the channel through which industrial hygiene can be brought to bear directly on the health problems of workers in small plants. The health officer has at his command the state industrial hygienists who are trained and equipped to cooperate with him, just as he, by virtue of his position, has the most complete acquaintance with local needs and resources.

This clearly enlarges the task of the public health physician in maintaining adult health. If the general health of a highly important and numerous group in the population is to be improved it will be necessary not only to control unhealthful conditions in the working environment but also to give consideration to such factors as proper living conditions, elimination of

strain and hurry, nutrition, and communicable diseases; in fact, attention must be given to a general adult health program for workers. In order to be successful, a broad public health program of this character must be closely interwoven with existing public health activities.[4]

In this sense, then, every division of a state or local health department plays a part in building the foundation for promoting the health of workers.

"In recent years," wrote Sir George Newman,[5] "we have learned that public health is not only a matter of the postponing of mortality and the prevention of sickness, but of the positive side of health—the increase of vitality, capacity, and efficiency of the human body. Our aim is not only to oppose diseases but to advance and develop physical fitness and well being. To secure this end, we must have regard to the whole life of man—his heredity and upbringing, his work and rest, his food, his habits, his environment. We must pay attention not only to his actual ailments and diseases, but to the conditions making for a maximum degree of personal health. Thus it comes about that a new relation is found to exist between occupation and health. In a word, the health of the industrial worker forms an integral and inseparable part of the health of the community."

It is for this reason that every state, county, and local health department has a responsibility to cooperate with industrial management, labor, and private medicine in attaining their common goal—better personal and more efficient group health.

No public health program can function in a vacuum.

A complete industrial hygiene program depends upon industry, labor, and private medicine. This truth is supported by the fact that two-thirds of the workers in this country are not provided with full-time or even part-time medical services at the plant.

They depend upon their private physicians, or go without. This places an important responsibility upon the practitioner who sees industrial workers, either as their family doctor, as an industrial physician in the plant, or as a health officer.

The local health officer has at his command not only the services of the state industrial hygiene division, but also the facilities available from the Public Health Service.

There are, briefly, four or five such facilities which, if utilized, can go far in conserving the health and efficiency of millions of workers. The official agencies can provide such services as consultation with plant management regarding corrections of environmental hazards and advice as to the relative toxicity of materials being used or being considered for future use. Two more important services include necessary laboratory facilities, clinical and physical, and assistance in developing, maintaining, and analyzing absentee records.

No Aladdin's lamp is needed to call these public health utilities into action. A telephone will do the job!

The universal goal of all medical men—private, industrial, and public health—is the creation of a healthier, more vigorous America. Industrial hygiene can be the backbone of a progressive, enlarging program to keep America strong, and make America stronger.

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DISCUSSION (*Abstract*)

Dr. Carl A. Nau, Galveston, Tex.—It was my privilege to engage in the formulation and development of a program of industrial hygiene in Texas for five and one-half years. Again and again we were confronted with a lack of interest on the part of health officers.

It is regrettable that health officers in general have not yet realized that industry offers to them an approach for a public health program similar to that offered by the schools. In industry our adults can be approached for a program of tuberculosis, malaria, hookworm, and venereal disease control, nutrition, dental hygiene, and so on, whether it be case-finding, education, rehabilitation, prevention or treatment. Here, too, the idea of medical examinations at regular intervals can be promoted. Not only the worker but also the employer profits. If health officers could be thoroughly convinced of this, I am certain they would gladly devote more attention, time and thought to industry and to our employed; and through such interests and attention they would bring to their activities increased appropriations, enabling them to carry on other phases of their public health programs more effectively.

Employers pay a major share of, and control to a large extent, our taxes. Health officers would do well to try to convince them that public health departments can be of direct and positive service to them and their employes and that such services warrant increased appropriations.

Thus far employers and employes have been neglected, and now as never before, it behooves us not only to maintain the health of our workers but also to develop it to the highest degree possible.

Dr. John W. Dugger, Jackson, Miss.—It is just as necessary to carry on an adult hygiene program in industry as a school hygiene program in the schools. The breadwinner must be kept in good physical condition. I do not discount occupational diseases as unimportant, but, as only 10 per cent of our lost time in industry is due to occupation, our efforts should be directed toward controlling the illnesses that cause 2 per cent of lost time among the workers. By making work room surveys, we can determine the industrial hygiene problem and recommend control measures that, no doubt, would control occupational diseases. It will be much more difficult to control the man-power loss caused by the common infectious diseases and remediable defects. Many phases enter into a program of this kind. We must secure the cooperation of the medical profession, employer, labor, and employe. It will require diplomacy, salesmanship, patience and effort to make a program of this kind succeed. To obtain the best results, I believe it will have to be done by the personnel of the health department, and when the job is finished, give the results to the private physician for him to interpret and advise the employes what to do. In other words, dump into the lap of the physicians the treatment and correction of defects.

In Mississippi we have examined about 15,000 employes. In one plant we found 6 per cent positive Wassermann tests; 17.9 per cent high blood pressure; 58.1 per cent needing attention to teeth or gums; 1.1 per cent with definite tuberculosis shown by x-ray; very few who were satisfactorily vaccinated against typhoid fever or smallpox; and other defects.

I was told after this job was completed that the dentists were so busy pulling teeth and correcting conditions of the mouth that the people living in the little town and in adjacent towns could not have dental work done. A great deal of advice along that line was followed and many men had their mouths cleaned up who had never given it a thought. The figures upon typhoid and smallpox immunization prove to you how careless the population as a whole is in keeping these important immunizations up-to-date.

The follow-up work was done by the personnel of the Jackson County Health Department. The typhoid and smallpox immunizations were brought up-to-date 100 per cent with all employes. Our records show after tuberculin testing about 20,000 people in industries, that the positive tuberculin reactors will reveal about 1 per cent of incipient or positive cases. At the present time, we have 59 health departments organized in Mississippi. Seven additional counties have made the appropriation, which makes a total of 66 that will have full-time health work, leaving only 16 that have part-time health officers. No doubt, within the next year or two, all counties, making a total of 82, will be completely under full-time health department supervision. In every county where this program has been put on, we have the full cooperation of the medical profession, as well as the health officer and his personnel.

Dr. Arthur T. McCormack, Louisville, Ky.—For many years it was practically impossible for a health officer to get into an industrial plant.

Now, there has been a social revolution in this country. We are going to get into the industrial plants of the country through educational means that will secure the cooperation of both the employer and the employe.

Migration of population in boom times and hard times makes difficult public health problems. Elliott County, Kentucky, is a poor county without a railroad in it. Its school population was cut a little more than 50 per cent during that remarkable, happy time when every pot was to have its chicken and every family was to have two automobiles in its garage. Then the school population and the gross population of Elliott County from 1930 to 1940 were a little more than doubled. There was no one in it at either time who did not belong to Elliott. They just went off and left their homes temporarily.

Here is what I am getting at. No industrial civilization has ever persisted for any length of time, anywhere on the face of God's green earth. They rise and thrive, but they are built on stony ground. They do not produce much in a material way except the things they sell; they do not produce much in folks. What I want to see us do is to preserve the people in this country whose feet are on the ground and whose hands are in it.

I remember a classic remark a great many years ago by my friend Dr. Hayne, who was wondering whether the people who were making the laws and leading the industrial civilization that was then developing in this country were thoughtful of the problems of the people who lived at home and made the country and fed every one of those industries, who supported every one of them, and who furnished manpower for every one of them, because there are no breeding grounds around industry; there are none around urban civilization. All the new human material we are going to get, we are going to get from the same place we get all the rest of the livestock. We have to take care of our agricultural population, but while we are doing it, let us remember to try to take care of the cities, a necessary evil. They are man-killers. We have to take care of industry, but do not let it take us over. If we do, we will be like France, we will be like every other industrial nation. We will be dependent upon a group of people without stability, who have no place to stay. Let us preserve our rural population.

I saw interest in industrial health developing in Detroit twenty years ago, but it might have just as well been in China, as far as we were concerned.

Ninety per cent of the regular public health program, is preventing common diseases. They just have more in industry because they are closer together. We have to be eternally and everlastingly vigilant about doing the whole job and doing it better, and getting more county health departments, and, incidentally, building more sanitary privies at farm homes.

Dr. James A. Hayne, Columbia, S. C.—We have a spectacle in the United States at the present time that makes us older men hang our heads in shame. I happen to be old enough to have been in the Spanish-American War. When the president of the United States called for volunteers, and asked for two hundred thousand, he got four hundred thousand. I want you to contrast that with the present indifference and lack of patriotism of the United States of America. You not only have not enough volunteers, but you cannot make the people stay that are drafted. Our complacent physicians have allowed about 50 per cent of able-bodied individuals to escape draft, first, because their teeth are not good enough to bite the enemy. Yet they are well nourished and they look pretty well when they come

up before the draft board. They manage to walk the streets of our cities without any appreciable effort, and yet they are flat-footed and cannot do military duty. In addition to that, we have said that all these people who are going around with syphilis should be exempted from duty. What is the corollary? Go out and get syphilis if you do not want to fight! And believe me, in South Carolina they do not go out and get syphilis, but they go out and get gonorrhea so they cannot fight. We have had many instances of that. That is the colored population, and probably many of the whites that we do not check up as well as we do the colored.

In the Spanish-American War I slept on the ground for thirteen dollars a month. I was a physician. They had no people getting around and getting up dances for me. They had no one giving me amusements of any sort. All the amusement I had was what I could get with my thirteen dollars.

Dr. Townsend (*closing*).—I have been criticized by friends of mine, who should know better, that there seems to be a policy prevailing in the Division of Industrial Hygiene to set up individual health units to work in state health departments, in other words, a health unit within a unit. Nothing is further from the truth. These friends of mine have been misinformed or have not understood our policy.

Our feeling is that there should be in state health departments a group, as a spearhead, consisting of a physician, an engineer, and a chemist, especially trained in surveying certain hazardous occupations and in the analysis of gases and dusts, which the average chemist or engineer is not qualified to do. But this unit, this spearhead which makes contact with labor and with management and with the local health departments will call upon the state health officer for assistance from every division within his office. In other words, the health department should be at the disposal of the industrial hygienist to concentrate at a focus where that concentration is necessary.

GENERAL PRACTITIONERS AND PEDIATRICIANS: RIVALS OR CO-WORKERS*

By J. P. PRICE, M.D.
Florence, South Carolina

If there are any two groups in medicine which should work in the closest of harmony they are the general practitioners and the pediatricians. A large proportion of illness in children and infants in this country is handled by the family physicians, and general practitioners might well be called part-time pediatricians. On the other hand, pediatricians are in reality physicians who carry on a general practice up to a certain age level. Consequently, there is a definite overlapping of the work carried on by these two groups and where there is overlapping there must be mutual understanding and cooperation or else there will be friction.

The medical training which most of us as pediatricians received, taught us how to deal with the patient but, unfortunately, it did not teach us how to deal with the general practitioner, and when we started out in practice we were forced to learn our lesson from conversations with older physicians, from observation, and from our own mistakes. And all too frequently it was a mistake which taught us our first lesson. A personal experience will illustrate what I mean.

Soon after I opened an office for the practice of pediatrics, I was approached by a district health nurse who asked me to conduct a free well-baby clinic. She said that no such clinic had ever been held in the community and that there were many poor children who would be greatly benefited. Naturally, I was flattered. I was confident that my years in medical school and my general and special medical training in hospitals had equipped me to handle any type of pediatric problem which might arise. Consulting an older physician on the staff of the hospital with which I was connected and securing his blessing, I set to work. The clinic grew by leaps and bounds. The nurse accredited the growth to her tireless efforts while I was sure that it was due to my great ability as a specialist in the diseases of children.

Then came the awakening. The nurse, in her enthusiasm, had broadcast her invitation without due regard to the social and financial status of the patients and I, unwittingly, had been giving my services to those who should be paying for the advice they received. Is there any wonder that the number of children who attended increased each week? The clinic was abandoned and my self-esteem received a partial set-back.

The complete deflation, however, did not take place until some months later. A general practitioner, taking an interest in my welfare, called me to one side and told me just what my efforts had accomplished. When certain physicians in the community saw their good pay-patients going to my clinic where they received care for nothing, they concluded I was a young upstart, attempting to build up my reputation and practice at their expense, and they resolved that so far as they were concerned any pediatric help which they might need would be secured elsewhere. No parachutist ever hit the ground any harder than did my ego when this general practitioner had finished talking. I suddenly realized that no matter how great my scientific

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ability might be, I could never be a success as a physician until I had learned more of the art of medical practice. I had undertaken the clinic with the idea of rendering aid to the underprivileged and had ended up by helping a group of citizens to evade the payment of legitimate bills for professional services. But more, I had antagonized certain physicians in the community in which I planned to live. Years have passed, and the physicians who planned to ostracize me are now my friends, but the lesson which I learned is one I will never forget.

Why should there be any friction between the general practitioner and the pediatrician? All of us will agree there should not be and yet all of us know that at times friction does arise. But, why? This is a question which I have been trying to answer. I have discussed the problem with many of my good friends in general practice and it formed the basis of a questionnaire which I recently sent to a selected group of general practitioners in different states. The information secured in these conversations and the answers received from my letters form the basis of this discussion.

Three specific questions were asked of these physicians. What do you expect of the pediatrician when you call him in consultation or when you refer a patient to him? Have you been satisfied or disappointed in your work with pediatricians? What specific acts should the pediatrician guard against, acts which might tend to promote friction between him and the general practitioner?

Before giving the answers to these questions, I wish to make this one point clear. I am convinced that, by and large, pediatricians and general practitioners are honest individuals who are trying to do the best they can and that the mistakes which are made are mistakes of judgment and not of purpose.

Now to the questions and their answers.

(1) What do you expect of the pediatrician when you call him in consultation or when you refer a patient to him?

Here are some of the answers:

"I expect the consultant to go over my patient thoroughly, give me his frank and candid opinion, and the best of his judgment in how the case should be handled."

"I expect help and suggestions as to diagnosis and treatment, whether they agree with what has already been done or not."

"I expect assistance in arriving at a correct diagnosis or suggestions as to changing or improving the treatment."

"Consultations should be constructive, enlightening and enjoyed."

"I expect a diagnosis, if possible, the type of treatment, and whenever possible, the return of the patient to me for a continuation of the treatment."

"When I refer a patient, above all I want a letter acknowledging the same, and if possible the diagnosis and an outline of treatment."

"I expect an honest opinion as a consultant and return of my patient, not dissatisfied with my efforts (provided, of course, that my efforts have been at least honest). I thoroughly enjoy consultation on my cases, although I do not feel a compulsion to agree with the opinions."

"If the pediatrician has my patient in the hospital, I want an occasional note from him telling me how my patient is doing. I do not like to wait until the child is back home running around the yard before I am able to tell the family the diagnosis."

Summarizing these answers and others which are not given but which follow the same general tone, it can be said that the general practitioner wants the following when he calls a pediatrician in consultation or refers him a case:

(a) A letter acknowledging the arrival of the patient.

(b) A thorough examination.

(c) An honest opinion rendered to the family physician as to the condition of the child.

(d) An outline of treatment if the patient is sent home.

(e) If the patient is in a hospital, keeping him there until he is out of danger, and an occasional note or telephone call to the family physician regarding his condition.

(f) A return of the patient to the family physician with instructions as to further care.

(g) A discussion of the case with the family carried out in such a way that the family will be satisfied and will still have confidence in the family physician.

(2) Have you been satisfied or disappointed in your work with pediatricians?

Let it be said to the credit of those in our specialty that the majority of general practitioners who answered this question appeared to be satisfied with the treatment which they have received at our hands. These quotations will summarize the answers received:

"I have never, in any case, received anything but the most courteous consideration, either in the home or in the hospital."

"I have been satisfied with the good pediatricians."

"I have no criticism to make of our local pediatricians as they are ever ready to offer suggestions if consulted and are very nice in every way in seeing or in handling a case. I realize we are more fortunate than they are in some places where they have the 'we know it all' type."

"My past experience has been generally very pleasant."

(3) What specific acts should the pediatrician

guard against, acts which might tend to promote friction between him and the general practitioner?

It is in the answer to this question that we find the real meat to our problem, for it is here that we begin to see ourselves as others see us. No matter how good our intentions may be, we are prone to say and do little things which are susceptible to misinterpretation and these are the things to be avoided.

Sifting and analyzing the answers, I find five main potential sources of friction and these are discussed in order of importance, beginning with the least:

(a) Assuming an air of superiority.

I do not believe that the average pediatrician is a conceited or pompous individual, but evidently there is an occasional one of our number who gives this impression. One practitioner refers to the "know it all" type, and another, a physician in North Carolina who has been engaged in general practice for over thirty years, writes:

"I must say that I have always enjoyed my association with pediatricians. Only one time have I been made to feel that a pediatrician has not treated me just right. That happened when the pediatrician knew so much more than I did and talked in such a way that it became clear to the family that I knew so much less than did the specialist. This made me feel humiliated, but I never did mention it to anyone. It so happened that I never had this specialist in consultation any more."

For those of us who tend to be sold on our own importance, that last sentence alone should give us ample food for thought.

(b) Doing things that are not essential.

This point has been brought out by several in private conversations and a composite of what they said would be this:

"When I send a patient to one of you pediatricians I want you to do everything that is necessary for the welfare of the child, but I do not appreciate the occasional pediatrician who insists upon carrying out unnecessary diagnostic or therapeutic procedures. There is one pediatrician, for instance, to whom I have sent several patients and every patient was given a blood transfusion within forty-eight hours of admission to the hospital. I realize I do not know all there is to know about medicine, but I do know that all of these children did not need transfusions.

"You say that this may seem uncalled for, but that it does no harm. I disagree with you. It does do harm. In the first place, it imposes an unnecessary financial burden on the family—and that frequently means the family can't afford to pay both you and me, and I am left with the bag to hold. But even more important, it is making the practice of medicine far more complicated than it should be and is glorifying the technical side of medical practice. Slowly but gradually the public is beginning to wonder whether correct diagnosis and adequate treatment can be secured outside of a laboratory or of a hospital. And this is not fair to the medical profession or to the public at large.

"So when I send you a patient, do everything that is necessary but leave off the frills."

(c) Failing to keep the family physician informed regarding the welfare of the patient.

Many physicians mentioned this possible source of friction. A friend of mine, who lives in a small town, handling a tremendous country practice, dropped in my office one day and in the course of his visit gave me the following "pep-talk", which will summarize what other practitioners have suggested.

"One thing you specialists must watch out for is that of keeping the family physicians posted as to what is going on.

"When I send you a patient for examination and diagnosis I want a letter or message from you very shortly. The day or the day after the child is brought back, the parents will drop by my office to talk things over. They want to know what the specialist said. Sometimes your letter has arrived and sometimes it has not. I wait a day or two and then I call you on the phone, at my expense. You tell me that your letter is in the mail, and I smile, because I have told the same type of story myself. Another day, and your report finally comes.

"Or, I send you a patient to the hospital for treatment. The family lives two or three miles out in the country and each day some member will run in to town and come to my office for news about the sick child. You know, we general practitioners have to do many things for our patients, and one of them is to keep the entire family up to date regarding the condition of the one who is sick. Again I look for your letter or phone message, and again you may or may not get in touch with me. At times, it becomes really embarrassing.

"You city specialists do not realize what we country doctors are up against and how much it means to us to keep in close touch with our patients. Three minutes of dictation and a three-cent stamp will do much toward keeping us satisfied with what you are doing—so you specialists keep that in mind."

(d) Accepting the referred patient as a permanent gift.

How long should a referred patient be kept by the pediatrician before he is sent back to the family physician? There is no dogmatic answer which can be given. On one extreme we find the practitioner who said:

"When I send a baby to you I want you to take charge and handle things until the baby is big enough to talk and get around. I do not know much about babies and I do not enjoy treating them. So the pediatrician is welcome to them."

On the other hand is the physician who says:

"All I ask of the pediatrician is a diagnosis and an outline of treatment. I can handle the rest of it for myself."

So far as I can determine, however, the majority of physicians want the patient kept under the care of the pediatrician until the immediate condition has been diagnosed or treated—and then referred back to the family physician. As one man expressed it:

"If we can carry out the treatment when the patient goes home, let us do it."

Failure to do this has provoked friction. Listen to what this general practitioner said:

"Soon after I moved to my present location I started referring my little patients to a well known pediatrician in a neighboring city. I soon found that the pediatrician would write me very courteous letters, but that the patients did not come back to my office.

"One day I met the mother of one of these patients and asked her why she had not brought her little girl back to see me.

"'Don't you remember,' she said, 'you sent me up to Dr. ..... He told me that if anything went wrong all I had to do was to call him on the phone and he would tell me what to do. And that is what I have been doing.'

"Do you blame me for not sending him any more patients? I wanted him to help me out, not to take over my practice."

Here is another comment, terse and to the point:

"After the consultation, I rarely see the patient."

And another:

"The trouble with some of you specialists is that once you get a patient you keep him until he has outgrown you."

And another:

"When I send one of my patients to the pediatrician for hospital care I want him to keep that patient until he is out of danger and to send him back to me with instructions as to further treatment. I may not be much of a doctor, but I think I can tell when the patient needs to go back to the pediatrician, especially if he writes me a letter with a specific request."

Fortunately, the number of pediatricians who keep referred patients as permanent cases appears to be small, but these few have done much to promote friction.

(e) Criticizing the family physician.

We have now reached the most important potential cause of friction. Listen to some of the comments received in answer to the questionnaire:

"It would be well for the pediatrician to bear in mind when we refer patients that we are not specialists but are supposed to know a little about a dozen different specialties, so let us down easily to the family."

"Avoid any remark that the family may construe as reflecting on the treatment of the case by the family physician."

"Refrain from referring to little things which the family doctor should have done or not done."

"The pediatrician should guard against any reflection on the patient's former physician. Things said go a long way and often hurt instead of helping."

"Avoid open criticism of treatment which might cause a strained relationship with the family. The 'small' consultant will often cause ill-feeling by leaving the impression that previous treatment has been all wrong."

"If previous treatment has been open to criticism tell the doctor but not the family unless the doctor has been criminally negligent and is unfit to practice medicine anyway."

"To imply that previous treatment has been wrong does the patient no good and is cruel to the parents who will blame themselves for negligence."

From conversations and from these comments, I am convinced that few pediatricians will maliciously malign a general practitioner, but that some will inadvertently drop a remark which the family will construe as open criticism, and this starts the gossip ball to rolling. Here is an illustration of what can actually happen:

A pediatrician was called in consultation by a family physician to see a child who was convalescing poorly from an attack of pneumonia. Blood examination showed that a leukopenia had resulted from the usage of sulfathiazole. The pediatrician told the family physician his findings and then told the family. Everyone seemed satisfied. A transfusion was given and the child was soon back to normal health.

Several months later a friend met the pediatrician and made this remark: "I saw the father of that child who had the pneumonia. He told me that if the family doctor had given one more dose of that medicine, the child would have died—and that they took the child to you just in time."

Should this remark get back to the family physician, how would he feel? And yet, whose fault was it that the patient's family twisted facts around to the extent of implying that the family physician had been negligent? The pediatrician had done his utmost to explain to the family how such a condition might arise in any patient taking large doses of sulfathiazole—and that it could have happened just as easily if the child had been in a hospital. And in spite of this, the story of the sickness grew until the pediatrician was the hero and the family physician the victim of neighborhood gossip. If such an occurrence can happen, and it did happen, when the pediatrician is making every effort to cooperate with the general practitioner, how much more damage can be done if the pediatrician is not extremely careful of what he says or implies to the patient's family.

The family, and particularly the parents of a child who is sick, are not normal psychologically and their usual capacity for logical reasoning is impaired by the pervading atmosphere of abnormal emotionalism. The pediatrician must ever bear this in mind and choose his words with care if he is to protect the interests of the family physician and avert friction between himself and the general practitioner. On the other hand, any physician should accept heresay criticism of his work with more than the proverbial grain of salt, for a simple case of roseola can change into a malignant smallpox overnight, if enough gossipers get hold of the story.

As you may have noted, no mention has been

made of the part which the general practitioner might play in the development of friction. This has been intentional. I feel that I am justified in suggesting to myself and to my fellow pediatricians little things which we might or might not do that will help us to make our associations with the family physicians more pleasant. But I am neither so wise nor so foolish as to attempt to do the same for the general practitioner. It is my hope, however, that a physician in general practice will some day attempt to do for his colleagues what I have tried to do for mine, and show them the little things which they might do or not do which will make their contacts with the pediatricians more profitable and enjoyable.

General practitioners and pediatricians: rivals or co-workers? There can be but one answer to this question. They should be and must be co-workers in every sense of the word. The welfare of our patients, the welfare of the public at large, and the welfare of our own medical profession demands it. And it is my hope that the discussion presented today may, in some small way, serve toward the attainment of this goal.

In conclusion, I wish to read a paragraph which was written by a colleague and friend, after reading the first draft of this paper. He is a general practitioner, but he is not a family physician of the old school. He is a family physician of the new school, busy day and night and yet finding time somehow to attend medical meetings, to slip off for an occasional post-graduate course, and to keep abreast of what is new in the field of medical practice.

"The relationship between pediatric specialist and family physician should not be a source of jealousy or of antagonism if it be predicated on the frank understanding that the pediatrician has more to offer to a certain proportion of the sick in the age group concerned, not because the specialist is a superior scientific scholar, which he may or may not be, nor even because of his specialized post-graduate training, but because by virtue of his limited field and his membership in group organizations, he has the time and facilities to keep abreast of the daily advancements in the science and art of children's diseases. The relationship should be based on the elementary assumption that the interests of the individual patient are paramount and supersede whatever the doctor involved, whether specialist or family physician, might consider his dignity or the concern of personal aggrandizement. Finally, it should assume that, at least under the present economic dispensation, a large proportion of the ills of the children in this country are cared for with reasonable competence by the family doctor along with the rest of the family. The pediatrician can make his greatest contribution to his community in two ways: by giving his recognized special knowledge and skill wherever it can help, and by elevating the general standards of medical care in the realm of childhood through his association with all medical practitioners."

DISCUSSION (*Abstract*)

Dr. Borden S. Veeder, St. Louis, Mo.—We have a great deal of difficulty at times, in the consulting relationship, when one does run across a very sick child in which the diagnosis is wrong, or where the treatment is quite the opposite of the treatment which should have been given.

I recall one very difficult time I had in seeing a child who had been under the care of a general practitioner for nephritis for about six weeks, an edematous child who had a nephrosis, in which the treatment should have been quite different. The child was absolutely starved. One had to turn around immediately and reverse the treatment in that case.

I do not know how we are going to smooth this thing over with the parents because, after all, parents do feel, if the treatment is radically changed immediately, there is something wrong. Many of the difficulties that arise are due not so much to the attitude of the general practitioner and the pediatrician as it is tied up within the abnormal psychological reaction the parents have when children are sick and that is a thing we all have to face. The general practitioner has to be broad enough to understand it, and so does the pediatrician.

While practice varies in different communities, I think most of the men in the larger cities will agree with me that it is only a very small part of their work today that comes from the general practitioner as a pediatric consultant. Most of the work of the pediatrician is purely general practice. He takes the child from the time of birth and cares for that child up into the adolescent period, and he acts purely as the general practitioner and the family consultant in those matters.

As a matter of fact, it seems to me that the general practitioner as a rule, particularly the younger man, is keen enough not to pick the pediatrician as his consultant. If he has a child with an allergy, he sends that child to the allergist, not to the pediatrician. If he discovers sugar in the urine of the child, he will send that child to someone who is a specialist in diabetes rather than to the man who is a specialist in the child.

Certainly, any rivalry there might be between pediatricians and general practitioners will be more in the nature of a rivalry which might exist between two general practitioners in the same community, or between two pediatricians, rather than between two men in different fields of work.

Dr. Hall Farmer, Macon, Ga.—In most instances physicians are fair and do not mean to criticize other physicians.

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M. Y. DABNEY, M.D., Editor
C. P. LORANZ, Secretary, Treasurer and General Manager

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EDITORIAL DEPARTMENT

SOUTHERN MEDICAL ASSOCIATION
Thirty-Sixth Annual Meeting
Richmond, Virginia, November 10-12, 1942

THE RICHMOND MEETING
November 10, 11, 12

During World War I, twenty-five years ago, the Southern Medical Association held a patriotic meeting in Memphis. This was one of the well-attended early meetings of the Association.

This year in Richmond again the problems of war as well as peace will be discussed. A large number of section programs have already been completed. Among subjects seen in the lists, to be presented by men now serving in the armed forces, are a number upon food and the digestive tract of the soldier. The Section on Gastroenterology will have a symposium upon military medicine. In Richmond, papers will be presented upon peptic ulcer in the army, military gastro-enterology, both its medical and surgical aspects, functional digestive diseases in an army general hospital, food and the war effort, facial fractures in the naval service, penetrating wounds and gunshot wounds, obstetrics and the war, acoustic trauma in industry and war, anesthetics in a military hospital, and public health near a large defense plant. It is probable that not a section program will be untouched by the pressing requirements of military medicine.

There will be ample time for the civilian ailments, which still beset the army too. A new section has been added, that on general practice, which to some extent, takes the place of the general clinical sessions formerly conducted by out-of-territory speakers. The program in full will be published in the November issue of the JOURNAL.

Social entertainment will necessarily be somewhat curtailed in Richmond. Since gas is rationed in Virginia, no drives will be planned. Social functions as well as scientific meetings will be held as much as possible in places accessible on foot.

Nearly a thousand hotel reservations have been made. Tuesday, the opening day, will be Richmond Day, occupied with excellently planned local clinics. The profession of Richmond is a distinguished one and has outlined a most interesting schedule for this day. The last meeting in Richmond, nine years ago, was a memorable one, and this year's has a greater responsibility. Sections have found it necessary to cover ground rapidly, to present the necessary material in two days instead of three. The essayists chosen assure the able presentation of new work.

Pullman and hotel reservations should be made at the earliest possible date since the meeting, now close at hand, bids fair to be a large one. Richmond is ready for the arrival of the Association.

A SIMPLE TEST FOR ESTROGENIC ACTIVITY

Many patients are treated for hypo-ovarian function, that is, with follicular hormone, when no hypo-ovarianism has been demonstrated. This is because the preparations are very readily available for clinical use and the functional tests of ovarian activity are complicated and time-consuming. A clinical appraisal, often merely the age of the patient or a few indefinite complaints, is taken as evidence of the need of specific therapy. Quantitative tests for estrogen in the blood are troublesome, require the use of laboratory animals and much manipulation, and are rarely done in clinical practice. Endometrial biopsies likewise are enlightening but are complicated to perform. Papanicolaou

and Shorr[1] a few years ago described a method of staining vaginal smears to diagnose pregnancy and the several other phases of the ovarian cycle of animals and humans. This also presents difficulties of execution and has not been widely employed.

A very simple vaginal smear test for follicular activity has recently been described by Harold Mack,[2] of Detroit, which depends upon the presence of an abundance of glycogen in the vaginal cells of individuals with functioning ovaries. The vaginal smear is obtained with an ordinary cotton swab, which is then rolled on a glass slide to deposit a thin layer of cells. This is stained by placing it for a short time over a shallow dish containing iodine. The fumes or vapor which arise from the iodine stain the glycogen of the cells dark brown. In the absence of glycogen, the cells take a light yellow stain only. It is a very simple procedure. In young women with actively functioning ovaries, glycogen is shown by the abundant general dark brown color of the cells. Infants show few cells or cells which stain yellow. In women after the menopause scarcity of cells from mucosal atrophy or pale staining cells are shown.

If women after the menopause are given estrogens, either by mouth or by injection, glycogen again fills the cells. The activity of a given preparation of follicular hormone may thus be determined by staining the vaginal smear with iodine. The typical menopausal smear will fill with glycogen, then revert to glycopenia after cessation of estrogen therapy. Mack considers the vaginal glycogen content a sensitive index of estrogenic activity in women. From his work several estrogens appeared to be highly active when given orally, and their effects were observed in the vagina as rapidly after oral as after parenteral treatment.[3]

One would have to conclude that for the time being there is no very good reason for giving estrogens to women with abundant glycogen in the vaginal smear. If this hypothesis were accepted, and smears tested for glycogen before treatment, it might greatly reduce the unnecessary clinical use of the follicular hormone.

1. Papanicolaou, George N.: The Sexual Cycle in the Human Female as Revealed by Vaginal Smears. Am. Jour. Anat. (Supp.), **52**:519, 1933.

Papanicolaou, G. N.; and Shorr, E.: The Action of Ovarian Follicular Hormone in the Menopause, as Indicated by Vaginal Smears. Am. Jour. Obst. and Gyn., **31**:806, 1936.

2. Mack, Harold C.: A New and Rapid Method of Staining Vaginal Smears Based upon a Specific Color Reaction for Glycogen. Harper Hosp. Bull., **1**:54 (Jan.) 1942.

3. Mack, Harold C.; and Ale, Thompson: Appraisal of Estrogenic Activity by the Vaginal Glycogen Index: A Comparison of Oral and Parenteral Estrone. Jour. Clinical Endocrinology, **2**:361 (June) 1942.

BLOOD FATS

The blood cholesterol level is sometimes used in estimations of thyroid activity. Cholesterol is believed to rise and fall with variations in the activity of the thyroid, hence to some extent with the basal metabolic rate and the blood iodine level.

Thyroid development itself is believed to depend largely upon adequate intake of iodine. However, shortage of other nutritional elements also can result in abnormal thyroid structure.

Pantothenic acid is one of the chemicals separated from the vitamin B complex. More specifically, it is called the chick antidermatitis factor. The rat has a different antidermatitis factor. Pantothenic acid is one of the several B vitamins suggested as possibly concerned in human baldness.

According to Scudi and Hamlin,[1] of Merck Institute, puppies maintained on pantothenic acid deficient diets showed a fall in blood cholesterol and other blood lipoids. They developed extremely fatty livers. Young animals were much more sensitive to the deficiency than adults. Not many positive observations have been made upon blood chemical changes in vitamin deficiency, and this demonstration of a consistent change in the lipoid level, brought about by a particular accessory food factor, is of considerable interest. The lowered blood lipoids should presumably affect the tissues concerned in lipoid metabolism.

The endocrine glands control the circulating quantity of many substances. The blood sugar may be raised or lowered by proper use of insulin; blood calcium by parathormone, and sodium and potassium by adrenal cortical secretion. Presumably reverse reactions occur; changes in the blood sugar alter pancreatic structure, and so on. A lowered blood fat content might affect thyroid structure, if this organ largely controls any part of the lipoid level. Doubtless other glands are concerned.

The diseases of adults which result from deficient diets in childhood are not yet established. The subclinical deficiencies must make some of

1. Scudi, John V.; and Hamlin, M.: The Effect of Pantothenic Acid Deficiency on the Blood Lipoids of the Dog. Jour. Nutrition, **24**:273 (Sept.) 1942.

the developmental differences of adults, and where one encounters a young person with one of the degenerative diseases of old age, as cancer or hypertension, one should inquire carefully into the dietary history, in the hope of shedding some light upon these obscure factors. The endocrines control circulating quantities of many elements and complex molecules. Probably the available quantities of the same substances in the growth period, by a reciprocal action, control endocrine secretion and function.

One might expect the slowly developing deficiency diseases to be slow to cure. However, the twenty-four-hour response of late stages of human pellagra, which may have been years a-brewing, to nicotinic acid, is remarkable. Perhaps equally dramatic results are to be obtained with others of the vitamins as specific diseases caused by the deficiencies are identified. There may be a pellagra for each element of the B complex. Animal studies, as in the past, will provide leads for clinical investigation.

A CORRECTION

In the paper, "Gas Gangrene: Experimental Observations on the Use of Sulfonamide Derivatives and Zinc Peroxide in Its Treatment and Prevention," by Drs. Guy A. Caldwell and Frank J. Cox, of New Orleans, in the September JOURNAL, page 789, the following acknowledgment was omitted: "Aided by a grant from the Schwartz Research Fund."

TWENTY-FIVE YEARS AGO

FROM JOURNALS OF 1917

The Patriotic Meeting in Memphis.[1]—The Atlanta meeting of the Southern Medical Association last year, with an attendance of 1,500 members, or more than 2,000 if the physicians' wives, the exhibitors and visitors are included, marked the high level for medical gatherings in the South. When Memphis, after an interesting contest with Chattanooga, Asheville, Baltimore and several other cities, won the 1917 meeting, it was predicted that she would make the effort to eclipse her rival, Atlanta, in handling the largest convention of Southern doctors that has ever been assembled. . . . Patriotism and war medicine and surgery will be the central themes for the November meeting.

Drafting Medical Students.[2]—Instead of acting upon expert opinion, General Crowder announces his belief that "medical students should continue their studies to the best advantage in the field under the Medical Corps of the United States Army." . . . If the experience of the College of Physicians and Surgeons in New York applies throughout the country, 20 per cent of the students in the medical schools will be taken from their work and drafted into Army service. . . . in some districts in England there is only one physician to every 5,000 or 6,000 inhabitants. . . . The medical colleges of the country are as truly training camps for medical officers of the Army as those at Fort Oglethorpe, Fort Benjamin Harrison, or elsewhere.

Medical Students and the Army.[3]—Provost-Marshal General Crowder has ruled that medical students may enlist as soldiers in the Reserve Corps of the Army; and that after having been examined and accepted, they may be discharged to study medicine, subject to being called into service. If the medical student should leave college, except for physical disability, or if he fails to graduate, or advance from one class to another, he may be called into service at any time; and if the interne gives up his work in a hospital, either voluntarily or because he fails to do his duty, he may be drafted as a private in the Army. . . . This plan actually makes soldiers of medical students.

Health Officer, Birmingham.[4]—Dr. J. D. Dowling, Birmingham, has been elected City and County Health Officer to fill the vacancy caused by the resignation of Dr. Harrington.

1. Editorial. Sou. Med. Jour., **10**:767 (Sept.) 1917.
2. Editorial. Drafting Medical Students. Ibid., p. 770 (Sept.).
3. Enlisting Medical Students and Hospital Internes. Ibid., p. 827 (Oct.).
4. Ibid., p. 775 (Sept.).

Richmond—Where We Meet

A HISTORICAL SKETCH OF MEDICINE IN RICHMOND*

As might be suspected by those familiar with Virginia history, William Byrd II, that remarkable gentleman who was involved in practically everything that happened in the Colony during the early part of the Eighteenth Century, including the founding of Richmond, also embraced a knowledge of medicine among his vast catalogue of accomplishments.

Although the practice of medicine had been going on in Virginia, after a fashion, for nearly a century before Byrd reached his majority, he had little patience with the doctors of the period. His feelings were expressed in a letter he wrote to Sir Hans Sloane in 1806:

"The country where fortune has cast my lot is a large field for natural inquiries, and 'tis much to be lamented that we have not some people of skill and curiosity among us. . . . Here be some men indeed that are call'd Doctors: but they are generally discarded Surgeons of Ships that know nothing above very common Remedys. They are not acquainted enough with plants or the other parts of Natural History to do any Service to the World."

Byrd's library of 3,000 volumes, by far the most

*Prepared for the Journal by the Public Relations Department, Richmond Chamber of Commerce.

Home of the Richmond Academy of Medicine

extensive in Virginia, contained 200 medical books, which qualified him, at least academically, far above the average practitioner. He had knowledge of and remedies for everything from snake bite to toothache, and was one of the earliest colonial disciples of the cold bath as a preventive of the common cold. In this connection it was his contention that . . . "as agues come by taking cold I set my Country men an example that will gueard 'em from that inconvenience, if they'll have the grace to follow it. I have all the last winter gone once or twice a week into the river, without being discourag'd by frost or snow, and find so much benefit by that management that I design all ways to continue it throughout the year. This hardens me and makes me proofe against all sudden turns of weather that give colds to other people. . . ."

We find, however, that although his knowledge of native herbs and remedies was extensive in addition to the learning gleaned from his many medical volumes, Byrd believed that discretion was the better part of pallors caused by illness to his own person. After making extravagant claims for certain Virginia remedies in a letter to Sir Hans Sloane in 1709, he ended with:

"I am glad you are in health, I wish you may continue and advise you to what I practice my self never to take Physick when I am well, & not to make use of any Medicine but such as are very well tryed when I am ill. . . ."

Probably the first medical prescription of any consequence for the citizens of Richmond came from Byrd soon after the community's beginnings when an epidemic of dysentery struck the village. Very sensibly he advised Indian Physic, chicken broth, poached eggs and boiled milk, a treatment, which, in its basic elements, still holds good today.

Richmond was incorporated as a town in 1742, but its growth was relatively slow until 1779, when the capital was moved to the city at the falls of the James. Transfer of the capital brought culture of a sort to the rough frontier town and professional classes began moving in. New buildings went up, and by 1792, the new capitol building, designed by Thomas Jefferson, patterned after the Maison Carree' at Nimes, was complete. In 1800 the population was 5,735.

In 1796, the French writer, Rochefoucauld, mentioned having met two Richmond physicians during a visit, Dr. McClurg, a native of Scotland, and Dr. Foushee. Dr. Foushee was a native Virginian, born in 1749, and educated at Edinburgh. He began practicing in Norfolk and moved to Richmond about 1780. He served as a physician and surgeon during the Revolution, and from 1786 to 1790 examined large numbers of pension applicants. His signed statements describing their physical condition are preserved among pension papers in the State Library. He also had the distinction of serving as Richmond's first Mayor, in 1782, and was still one of the city's most respected citizens when he died in 1824.

Dr. James McClurg, who also occupied the Mayor's chair in 1797, was a man of wealth as well as civic and professional prominence. He was appointed the first professor of anatomy and medicine at William and Mary College, in 1779. This was the second professorship of this type established in the United States, the first being in Philadelphia. While still at William and Mary he joined the Revolutionary Army as physician, after writing to his friend, Thomas Jefferson, that "in this time of general activity I do not like to be an idle spectator; & I know not any post which would suit me so well." He moved to Richmond in 1783, and after his first election as mayor in 1797, served again in 1800 and 1803. He had reached the venerable age of 77 when he died in 1823 as the result of injuries suffered when the horses of his carriage ran away.

Other well-known physicians of the period in Richmond were Dr. James Drew McCaw, a nephew of Dr. McClurg, and Dr. James Currie.

Private medical instruction had been underway in Virginia and Richmond from earliest times, but the first attempt at a medical school occurred in 1835, when the Richmond Medical School was established with instruction in anatomy, physiology, surgery, therapeutics, hygiene, midwifery, pharmacy and chemistry. Several other private ventures in medical instruction were also begun about this time, but the school which was destined to grow into the Medical College of Virginia, one of the South's finest medical schools, started modestly as the medical department of Hampden-Sydney College in 1838.

The school opened its doors in the old Union Hotel on East Main Street, and it was hoped that the new institution would attract many students who were leaving Virginia every year for study in northern medical schools.

Soon there was agitation for better quarters and an entirely new building on Shockoe Hill was built on land donated by the city, and with funds loaned by the Legislature from its literary fund. Still standing today, the Egyptian Building, which was the first official home of the Medical College, is now surrounded by the new modern building of the institution.

The Medical College became established as a separate entity in 1854, when a disagreement arose concerning who had the right to appoint new members to the faculty, the Board of Hampden-Sydney, or the medical faculty itself. The Legislature settled it by granting the medical faculty a separate charter, and the school officially became the Medical College of Virginia.

The road of the new school was a hard one for awhile because a large part of the profession in the

state was aligned against it. In spite of interference the college continued to grow, and during the War Between the States the student body trebled. The Legislature came to the rescue again with an appropriation of $30,000, for a hospital adjoining the college, which became the only medical school in the South which did not close its doors during the war.

In 1893, after surviving the dark days of Reconstruction, the Medical College was faced with a new problem in the establishment of the University College of Medicine in Richmond, in direct teaching competition. Competition proved valuable, however, by providing a stimulus to better medical teaching in both schools. The intense rivalry of the two institutions created bitter factions in medical circles, but it put nearly every physician to studying and teaching medicine, and accomplished what the old school had been unable to do, stemmed the tide of Virginia students seeking a medical education in northern institutions.

In a city the size of Richmond, however, the support of two separate medical schools became increasingly difficult and by 1913 boards of the two institutions were ready to forget their differences and unite in one school. The consolidated institution retained the name of the Medical College of Virginia, and continued to expand as a state school.

The recent era of the Medical College culminated in 1940 with the opening of the magnificent new $2,500,000 general hospital, a 20-story structure, towering high above other buildings of the college. Built as the most modern structure of its kind in the South, the skyscraper hospital is completely air-conditioned, and is equipped with the finest medical accoutrements to be found.

The Richmond Academy of Medicine, host to the 1942 Southern Medical Association, was formed in 1866 as the outgrowth of the Medical Society of Virginia. Later, interest in the Academy waned and an opposition group, the Richmond Medical and Surgical Society, was formed in 1880 as a protest. As was the case with the University College of Medicine and the Medical College of Virginia, a merger was finally effected, occurring in 1890, uniting both groups under the name of the Richmond Academy of Medicine and Surgery. The first president of the new consolidation was Dr. W. W. Parker.

The Academy of Medicine continued to grow and prosper and by 1920 there were more than 250 members. In 1926 a campaign for funds to erect a permanent home for the Academy was begun, and the present building, in close proximity to the Medical College of Virginia, was completed in 1932. Need of a place to house the valuable medical library of Dr. Joseph Lyons Miller was the crystallizing factor in beginning the drive for a home for the Academy. At the present time the Academy meets twice monthly and has a membership of more than 350.

Medical College of Virginia and Hospital with home for white nurses in right foreground

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Alumni Reunions—Dr. James H. Smith, Chairman; Dr. Lewis E. Jarrett, Dr. Carrington Williams, Dr. S. A. Anderson, Jr., Dr. W. D. Suggs, Dr. Lee E. Sutton, Jr. and Dr. H. Wallace Blanton.

Fraternity Luncheons—Dr. Austin I. Dodson, Dr. W. K. Dix, Dr. T. B. Washington, Dr. L. O. Snead and Dr. L. T. Stoneburner, Jr.

Scientific Exhibits—Dr. W. Ambrose McGee, Chairman; Dr. D. B. Cole, Dr. H. J. Warthen, Jr. and Dr. J. C. Forbes.

Hobbies—Dr. Warren T. Vaughan, Chairman; Dr. J. O. Fitzgerald, Jr. and Dr. M. Grove-Hagen.

Golf—Dr. Paul W. Howle, Chairman; Dr. W. R. Jordan and Dr. R. V. Terrell.

Trap Shooting—Dr. Stuart N. Micheux, Chairman; Dr. B. R. Wellford and Dr. Chas. R. Robins, Jr.

Women Physicians—Dr. Emily Gardner, Chairman; Dr. Regena Beck and Dr. Pauline Williams.

Ladies' Entertainment—Mrs. James K. Hall, Chairman; Mrs. Thomas W. Murrell, Mrs. Wyndham B. Blanton, Mrs. Lee E. Sutton, Jr., Mrs. Austin I. Dodson, Mrs. J. Asa Shield, Mrs. Douglas G. Chapman, Mrs. James T. Tucker, Mrs. John Powell Williams and Mrs. Percy E. Schools.

Book Reviews

A Handbook of Allergy for Students and Practitioners. By Wyndham B. Blanton, M.A., M.D., Litt.D., Professor of Clinical Medicine and Chief of Immunology Clinic, Out Patient Department, Medical College of Virginia, Richmond, Virginia. 190 pages, illustrated. Springfield, Illinois: Charles C. Thomas, Publisher. Cloth $3.00.

The author of this very interesting handbook who is a distinguished teacher and clinician of Richmond, Virginia, has presented an excellent short textbook. He has condensed and clarified a subject which has become so complex as to terrify many who make the first attempt to study it.

The first part of the book discusses the fundamentals of allergy. Then follows the listing of the various allergens, their modes of action and methods of diagnosis, and finally treatment is considered under the headings of the various subdivisions of allergy, asthma, hay fever and so on. The appendix contains a number of allergy diets.

The book is clear cut, well written, and contains little of a controversial nature. It can be recommended to all practitioners of medicine who wish to keep abreast of the times.

Synopsis of Pathology. By W. A. D. Anderson, M.A., M.D., Assistant Professor of Pathology, St. Louis University School of Medicine; Pathologist, St. Mary's Group of Hospitals. 661 pages, illustrated. St. Louis: The C. V. Mosby Company, 1942. Cloth $6.00.

Dr. Anderson has attempted to retain facts and remove fancy in a fairly comprehensive outline of pathology. It is in some respects more abreast of current literature than larger textbooks. It is an excellent outline, illustrated with over three hundred excellent photographs and seventeen tables. This is a simply written and very readable volume. It should have value, not only for medical students and physicians, but also as a textbook in schools of dentistry, nursing and medical technology.

The Eye Manifestations of Internal Diseases. By I. S. Tassman, M.D., Associate Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania. 542 pages, illustrated. St. Louis: The C. V. Mosby Co., 1942. Cloth $9.50.

This book is a wonderful addition to ophthalmologic literature. It is arranged in an orderly manner inessentially two divisions. The student beginner and those inexperienced in ophthalmology find first a description of the normal structure of the eye, a general description of the causes of eye manifestations followed by structural abnormalities and manifestations. The methods of examination and the use of instruments to recognize and observe these changes are also explained.

The second division of the book is devoted to the description of eye manifestations in different diseases. There are separate chapters on congenital and hereditary manifestations; infections and infectious diseases, which include tuberculosis, syphilis, virus infections, fungus infections, parasitic infections and focal infections; drug and chemical intoxications; diseases of the blood; disorders of pregnancy and menstruation; diseases of the endocrine glands and metabolism; avitaminosis and diseases of nutrition; diseases of the nervous system; intracranial tumors; diseases of the skin and diseases of the bones and skull.

Nineteen full color plates enhance the value of this book, which was designed principally for the ophthalmologist, but should be of great interest to all physicians.

Standard Nomenclature of Disease and Standard Nomenclature of Operations. Edited by Edwin P. Jordan, M.D. 1022 pages. Chicago: American Medical Association, 1942.

Hospital standardization and the requirements that followed the improvements of recent decades have made necessary a uniform nomenclature of diagnosis. The same is true of operations. This small volume, in revised form, gives the necessary data. It is a useful, handy thumb index book of pocket size and flexible binding.

How to Live in the Tropics. By Virginia Lloyd Hunt. 178 pages. New York: Harcourt, Brace and Company, 1942. Cloth $2.00.

For the layman living in the Tropics, good general and detailed advice is presented upon planning the trip, furnishing or building a dwelling, sanitation of foods, water and the home.

Sections are devoted to emergency treatment, though it is stressed that a physician should be obtained as soon as possible for any illness. There is a chapter on communicable diseases, and a course in practical nursing.

Chemistry and Physiology of the Vitamins. By H. R. Rosenberg, Sc.D., 674 pages. New York: Interscience Publishers, Inc., 1942.

The monograph, Chemistry and Physiology of the Vitamins, by Rosenberg, an excellent and timely addition to the ever-increasing vitamin literature, is intended primarily for the advanced student. It is a thorough review of the literature on vitamins through February, 1942, including references on the chemistry and physiology of all the known vitamins and vitamin-like substances.

The subject matter is presented in orderly fashion. The following subtopics are used in organizing the material for each vitamin or vitamin-group: nomenclature, including the various terms used in the early literature; chronology; occurrence; isolation procedures; chemical and physical properties; chemical constitution, proof of structure, and methods of synthesis; industrial processes of preparation; biogenesis; physiologically active derivatives; chemical and biological methods of determination; standards and units with their values in terms of milligrams; physiologic action on plants and micro-organisms; its role in animal physiology; avitaminosis and hypovitaminosis with clinical test methods; hypervitaminosis; and lastly the requirements of animals and human beings.

A section is devoted to clinical methods where data are available, but the monograph will be of special, practical importance only to those physicians who have special interest in biochemistry or physiology. The author has not attempted to cover vitamin therapy, but some of the underlying principles about which there is much confusion and misinformation are touched upon. The subject matter is well indexed and supplemented with author and patent indices.

This monograph should prove to be an extraordinarily useful reference book for biochemists and physiologists.

Intestinal Obstructions: A Physiological and Clinical Consideration with Emphasis on Therapy; Including Description of Operative Procedures. By Owen H. Wangensteen, B.A., M.D., Ph.D., Professor of Surgery of the University of Minnesota and Surgeon-in-Chief of the University of Minnesota Hospital. Second Edition. 484 pages, illustrated. Springfield, Illinois: Charles C. Thomas, Publisher, 1942. Cloth $7.00.

It is doubtful that the surgeon is ever confronted with a subject of greater interest or more serious portent than intestinal obstruction.

This second edition is much larger than the first, which contained 360 pages with 90 illustrations. The new volume contains 484 pages and 143 illustrations. An extensive bibliography is appended to each chapter, which provides reference upon all controversial subjects. The work is divided into four parts, the first of which has its main emphasis upon medical and operative therapy.

Of special interest are chapters in which are discussed the character and source of the distention; the manifestations of distention on the bowel wall; the systemic effects of distention, and the question of toxemia in relation to bowel obstruction.

The second part deals chiefly with diagnosis, especially the location of the obstruction, and, as nearly as possible, the identification of its type. Stress is laid on the importance of careful history taking and of a thorough physical examination; also on the diagnostic help to be gained from laboratory procedures, including roentgenography. The author devotes much space to the differential diagnosis between simple and strangulating obstructions.

The range of part three is broad. It includes the principles of treatment of abdominal injuries, including blunt trauma, penetrations, perforations of viscera, hemorrhage, and inflammatory conditions. Here also are discussed sodium chloride balance, hydration and water supply, blood and plasma transfusions, and oxygen inhalation. The chapter on decompression is very valuable in that it presents very clearly the shortcomings of suction and its contraindications. It gives warning to those who may rely too long on decompressive measures that are not bringing relief. Part three also takes up the technic of operations for the relief of obstruction, and gives details for postoperative treatment.

The final section discusses special obstructions.

Under this head are included congenital atresias, tumors, intraluminary obstructions, volvulus, intussusception, obstructions due to adhesions and bands, hernias, paralytic and dynamic ileus, thrombosis and embolism.

Familiarity with subjects covered in this volume is of invaluable help to the surgeon who may be faced with the problem of dealing with an obstruction at any time. It is also a valuable work of reference.

The Sulfonamide Compounds in the Treatment of Infections. By Maurice A. Schnitker, M.D., formerly Assistant in Medicine, Harvard Medical School and Resident Physician, Peter Bent Brigham Hospital, Boston, Mass.; Attending Physician Toledo Hospital. Edited by Henry A. Christian, A.M., M.D., LL.D., Sc.D. (Hon.), F. A. C. P., Hon. F. R. C. P. (Can.), Hersey Professor of the Theory and Practice of Physic, Emeritus, Harvard University, Boston, Mass. 195 pages. New York: Oxford University Press. Cloth $2.00.

This review is timely, impressively complete, and very readable.

Every physician who attempts chemotherapy should understand its contents. The foreword by the editor is well worth reading.

Directory of Medical Specialists. Certified by American Boards, 1942. 2495 pages. New York: Columbia University Press, 1942. Cloth $7.00.

This book is a God-send to anyone who refers cases to out-of-town physicians, as it lists all the diplomates of the fifteen American boards, giving them alphabetically and geographically. A history of each board and its requirements add further to its usefulness. This volume is, next to the medical dictionary, the most consulted book in the reviewer's office.

BOOK REVIEWS Continued on page 957

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The following is a complete roster of the officers of the *Southern Medical Association* and of associations meeting conjointly:

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National Malaria Society (meeting conjointly with Southern Medical Association)—Dr. L. O. Howard, Honorary President, Washington, D. C.; Mr. John H. O'Neill, President, New Orleans, Louisiana; Col. J. S. Simmons, President-Elect, Washington, D. C.; Dr. H. W. Brown, Vice-President, Chapel Hill, North Carolina; Dr. Mark F. Boyd, Secretary-Treasurer, Tallahassee, Florida.

American Society of Tropical Medicine (meeting conjointly with Southern Medical Association)—Dr. Ernest Carroll Faust, President, New Orleans, Louisiana; Dr. N. Paul Hudson, President-Elect, Columbus, Ohio; Dr. Joseph S. D'Antoni, Vice-President and Secretary-Treasurer, New Orleans, Louisiana; Col. Charles F. Craig, Editor, San Antonio, Texas. *American Academy of Tropical Medicine* (meeting conjointly with American Society of Tropical Medicine)—Dr. Herbert C. Clark, President, Panama, R. de P.; Dr. L. W. Hackett. Vice-President, Buenos Aires, Argentina; Dr. Ernest Carroll Faust, Secretary, New Orleans, Louisiana; Dr. Thomas T. Mackie, Treasurer, New York, New York.

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*Deceased.

Book Reviews

Continued from page 955

Plastic Surgery of the Breast and Abdominal Wall. By Max Thorek, M.D., LL.D., F.I.C.S., F.I.C.A., K.L.H. (France). Professor of Surgery, Cook County Graduate School of Medicine. With an Introduction by Rudolph Nissen, M.D., F.I.C.S., Formerly Associate Professor of Surgery of the University of Berlin, and Professor and Head of the Department of Surgery of the Medical University of Istanbul, Turkey. With a Foreword by J. Eastman Sheehan, M.D., F.A.C.S., Professor of Plastic Reparative Surgery, New York Polyclinic. 446 pages, illustrated. Springfield, Illinois: Charles C. Thomas, Publisher, 1942. Cloth $16.50.

This is a review of the literature on the subject plus the author's extensive studies of the pathologic entities and the best means of treating them surgically.

Says J. Eastman Sheehan in his foreword to the volume: "To tacitly condemn a woman to make the best of breasts that may weigh as much as thirty pounds each, and that in an even lesser condition of abnormality may alter her posture, impair her attractiveness, disturb her contentment with life, limit her economic opportunity and tend generally to destroy her happiness, is an obvious evasion of professional responsibility." And that, of course, is but one of the conditions discussed.

There are excellent sections dealing with the historic and anthropologic aspects of the breasts, and a full discussion of plastic surgery of obese and pendulous abdomens.

The book is printed on glazed paper and the illustrations are numerous and excellent.

From Witchcraft to Chemotherapy. By Sir Walter Langdon-Brown, Emeritus Professor of Physic and Fellow of Corpus Christi College in the University of Cambridge. 60 pages. Cambridge: At The University Press, and New York: The Macmillan Company. Price 60c.

This Linacre Lecture tells of medicine's indebtedness to witchcraft, fairies, folklore and the herbal remedies. Then are traced the steps in the elevation of therapeutics to the chemotherapeusis of today. An interesting dissertation.

The Clarks: An American Phenomenon. By William D. Mangam. With an Introduction by Edward Alsworth Ross, Professor of Sociology, University of Wisconsin. 257 pages, illustrated. New York: Silver Bow Press, 1941. Cloth $2.50.

The facts about William Andrew Clark and his children are detailed in this volume, whether they are damaging or good. A chapter is devoted to each of the children of this mining king. The final chapter gives some critical comments concerning each. To the physician it is merely reading, unless he is deeply interested in psychology or heredity.

Southern Medical News

ALABAMA

Dr. Douglas L. Cannon, Montgomery, Assistant State Health Officer and Director of the State Health Department's Bureau of County Health work, has returned from Edgewood Arsenal, Edgewood, Maryland, where he took a course of study on the medical aspects of chemical warfare arranged by Dr. George Baehr, Chief Medical Officer of the Office of Civilian Defense, in conjunction with army authorities. Dr. Cannon, representing Alabama, will conduct an educational program in the medical aspects of chemical warfare among practicing physicians of the State who may be interested in the subject.

Dr. M. Y. Dabney, Dr. Clifford L. Lamar and Dr. Lee F. Turlington, all of Birmingham, and Dr. T. Brannon Hubbard, Montgomery, are Alabama's representatives on the National Medical Council on Birth Control formed by the Planned Parenthood Federation of America.

Dr. W. J. Donald, Associate in County Health Work in the State Health Department, has been placed in charge of the new West Alabama district health office at Tuscaloosa. The district health office serves eighteen counties: Lamar, Fayette, Pickens, Tuscaloosa, Sumter, Greene, Hale, Bibb, Perry, Dallas, Marengo, Choctaw, Clarke, Monroe, Wilcox and Washington.

The Southwestern Division of the Medical Association of the State of Alabama, which met recently in York, was addressed by Dr. E. P. Hogan, Dr. A. L. Glaze and Dr. Gilbert Douglas, all of Birmingham. A round table discussion on gynecologic procedures was engaged in by Dr. Douglas, Dr. R. C. Hill, York, and Dr. S. O. Moseley, Selma.

Dr. L. O. Davenport, Birmingham, was reelected Governor for Alabama of the American College of Chest Physicians at its recent annual meeting.

Dr. Ralph L. Best, Newport, and Miss Rachel Ward Browne, Tuscaloosa, were married recently.

Dr. Hiliary H. Henderson, Jr., Greenville, and Miss Margaret Drennen Bissell, Birmingham, were married recently.

DEATHS

Dr. Joe Bancroft, Birmingham, aged 39, a member of the Army Medical Corps at Camp Rucker, died in September of a heart attack.

Dr. Robert R. Cornell, Birmingham, aged 73, died recently of chronic nephritis and uremia.

ARKANSAS

Dr. A. C. Curtis, State Sanatorium, has been appointed Director, Division of Tuberculosis Control, Arkansas State Board of Health.

Dr. E. J. Horner has been elected Surgeon of the Jonesboro Post of the American Legion.

Dr. B. J. Reaves, Little Rock, has passed his examinations as a Diplomate of the American Board of Obstetrics and Gynecology.

Dr. W. H. Bruce, Pine Bluff, has been elected President of the Jefferson County Medical Society.

Dr. W. J. Hunt has been elected Surgeon of the Warren Post of the American Legion.

Dr. E. Baker has been elected Surgeon of the Dermott Post of the American Legion.

Dr. Belle Dale Poole, El Dorado, has been appointed Medical Consultant, Crippled Children's Division, Department of Public Welfare, Little Rock.

Dr. L. M. Lile has been elected Surgeon of the Hope Post of the American Legion.

Dr. A. D. Cathey has been elected Surgeon of the El Dorado Post of the American Legion.

Dr. Doris Baldridge, Conway, has been appointed Faulkner County Health Director.

Dr. Fred W. Harris and Dr. Randolph T. Smith, Little Rock, recently attended a course on chemical warfare agents at the University of Cincinnati School of Medicine, Cincinnati, Ohio.

Dr. J. B. Wharton, El Dorado, has been called to active duty as Lieutenant, Naval Medical Corps Reserve, and assigned to Naval Hospital, Corpus Christi, Texas.

Dr. Hugh Brooke, Lieutenant Colonel, Medical Corps, U. S. Army, formerly of Conway, is now stationed at the 5th Base Hospital, Camp Young, California.

Dr. W. R. Parsons, Little Rock, has been called to active duty as Captain, Medical Corps, U. S. Army, and assigned to the Station Surgeon's Office, Fort Sam Houston, Texas.

Dr. Ellis P. Cope, Little Rock, has been called to duty as Captain, Medical Corps, U. S. Army, and assigned to Hensley Field, Texas.

Dr. John S. Agar, Little Rock, has been called to duty as Lieutenant, Medical Corps, U. S. Navy, and assigned to Naval Hospital, Corpus Christi, Texas.

Dr. S. S. Kirkland, Marshall, Captain, formerly stationed at Fort Leonard Wood, Missouri, has been transferred to the 34th Evacuation Hospital, Camp Barkeley, Texas.

Dr. Driver Rowland, Hot Springs National Park, has been called to active duty as Captain, Medical Corps, U. S. Army, and assigned to Turner Field, Albany, Georgia.

Dr. A. W. Thompson, Bentonville, has been called to active duty as Lieutenant, Medical Corps, U. S. Army, and assigned to Camp Bowie, Texas.

Dr. John E. Greutter, Little Rock, has been called to active duty as Lieutenant, Medical Corps, U. S. Army, and assigned to Camp Robinson.

Dr. J. M. Nisbett, Little Rock, has been called to active duty as Captain, Medical Corps, U. S. Army, and assigned to Cantonment Hospital, Fort Sill, Oklahoma.

Dr. Ralph E. Weddington, Batesville, has been called to active duty as Captain, Medical Corps, U. S. Army, and assigned to La Garde General Hospital, New Orleans, Louisiana.

Dr. J. B. Holder, Monticello, has been called to service as Lieutenant, Medical Corps, U. S. Army, and assigned to La Garde General Hospital, New Orleans, Louisiana.

Dr. C. A. Churchill, Batesville, has been called to active duty as Captain, Medical Corps, U. S. Army, and assigned to Base Hospital, Bowman Field, Louisville, Kentucky.

Dr. S. M. Graves has moved from Mount Levi to Clarksville.

Dr. W. M. Woods, Huntington, Lieutenant, Medical Corps, U. S. Army, is now in service overseas.

Dr. John M. Samuel, Little Rock, has been promoted to Major, Medical Corps, U. S. Army.

Dr. S. A. Thompson, Camden, has been appointed Chairman of the United China Relief Campaign in Ouachita County.

Dr. C. H. Dickerson, Conway, has been taking postgraduate work at Cook County Hospital, Chicago, Illinois.

Dr. B. Z. Binns, formerly of Monticello, has graduated in a course in aviation medicine for aviation medical examiners.

Dr. O. B. Barger, Lieutenant, formerly of Mountain Home, and Miss Lorean Anderson, Elm Springs, were married August 7.

Deaths

Dr. Jeff T. Holcombe, Mineral Springs, aged 77, died August 5.

Dr. John M. Stewart, Van Buren, aged 57, died August 17.

Dr. Clyde Vernon Powell, Forrest City, aged 54, was killed August 13 in an automobile accident.

DISTRICT OF COLUMBIA

George Washington University School of Medicine, Washington, is establishing first aid courses for 150 freshmen and sophomore students, the course to be presented through the Department of Surgery, and lectures given by certified Red Cross first aid instructors. Among the instructors are Dr. John B. Marbury, Dr. Julius S. Neviaser, Dr. William Ross Morris, Dr. Donald H. Stubbs and Dr. Alec Horwitz.

Jacobi Society at its annual business meeting elected Dr. Leon S. Gordon, President; Dr. Herbert Abramson, Vice-President; Dr. Sander Lachman, Secretary; and Dr. Joel N. Novick, Treasurer, all of Washington.

Medical Society of the District of Columbia is planning to replace some of the regular evening meetings during the year with luncheon sessions, as it is believed that practitioners will enjoy them more after carrying on the many activities the present emergency demands as well as their practices.

Dr. Milton B. Clayton, formerly of Statesville, North Carolina, has been appointed Chief Surgeon of the Southern Railway Company and of the lines included in the Southern Railway System, except the Cincinnati, New Orleans, and Texas Pacific. He assumed duties September 1, with headquarters in Washington.

Dr. George C. Dunham, Lieutenant Colonel, U. S. Army, Washington, is Director of the entire health and sanitation program which was recommended at the conference of American foreign ministers early this year in Rio de Janeiro and which is now being carried out in Latin America. Dr. Albert R. Dreisbach, Lieutenant Colonel, U. S. Army, Washington, has been assigned as Assistant to Dr. Dunham.

Dr. J. Winthrop Peabody, Washington, was inducted into the presidency of the American College of Chest Physicians during its recent annual meeting.

Dr. Raymond F. Metcalfe, Colonel, Medical Corps, U. S. Army, until recently on duty at the San Francisco Port of Embarkation, has been ordered to duty in Washington.

Deaths

Dr. Robert Starke Carey, Washington, aged 65, died recently.

FLORIDA

Dr. Henry L. Tippins, Miami, spent the month of July at Columbia University, New York Post Graduate Medical School, New York City, taking special work in pediatrics.

Dr. M. A. Collier, Wauchula, has been taking special work in gynecology at the Mayo Clinic, Rochester, Minnesota.

Dr. W. T. Simpson, Winter Haven, visited a number of clinics in New York City during July.

Dr. C. H. Wilson, Bartow, recently took a short postgraduate course in general practice at Johns Hopkins Hospital, Baltimore, Maryland.

Dr. Amelia B. Sheftall has moved her offices from Gainesville to 1818 Hendricks Avenue, Jacksonville, practice limited to pediatrics.

Deaths

Dr. C. D. Barnes, Lakeland, aged 76, died recently of hypertensive cardiovascular disease.

Dr. Robert L. Cline, Lakeland, aged 70, died recently.

GEORGIA

Dr. John W. Simmons, Brunswick, is Chairman of the committee on Industrial Health of the Medical Association of Georgia, which was organized in Atlanta in May, and Dr. Lester M. Petrie, Albany, is Secretary. The program of the Committee seeks to tie in with the state association's plan to improve nutrition among citizens of the state and to fight vitamin deficiencies among the lower income groups in industry.

Dr. Clair A. Henderson, Savannah, has resigned as Assistant City-County Health Officer of Savannah and Chatham County, and is now Commissioner of Health of Augusta and Richmond County. Dr. Henderson succeeds Dr. Thomas B. Phinizy, Augusta, who recently resigned.

Dr. W. H. Lewis, Rome, has announced that the Floyd County Hospital and Medical Center has been opened to the public.

Dr. J. A. Redfearn, Albany, President of the Medical Association of Georgia, has been elected Governor for Georgia of the American College of Chest Physicians for a term of three years.

Dr. Louis Holtz, formerly of Atlanta and East Point, has opened offices in the People's Bank Building, Carrollton.

Dr. M. L. Malloy, Vienna, has joined the staff of the R. J. Taylor Memorial Hospital at Hawkinsville.

Dr. Chas. S. Ward announces his association with Dr. Dan C. Elkin and Dr. J. D. Martin, Jr., Atlanta.

Dr. Hal M. Davison, Dr. James C. Thoroughman and Dr. Harold Bowcock, Atlanta, announce their association, practice limited to internal medicine and allergy.

Dr. Z. V. Johnston, Calhoun, has been appointed local Surgeon for the N. C. and St. L. Railway at Calhoun.

Dr. Howard Hilt Hammett, Jr., Atlanta, and Miss Katherine West Johnson were married recently.

Deaths

Dr. Claude Bernard Hicks, Atlanta, aged 57, died recently.

Dr. Doze B. Kitchens, Mitchell, aged 88, died recently.

Dr. Lucius Lamar, Dawson, aged 71, died recently.

Dr. Tanner Lowry, Cartersville, aged 62, died recently.

Dr. William E. Oliver, Cairo, aged 61, died recently of heart disease.

KENTUCKY

Dr. Charles B. Crittenden, Louisville, has resigned as Director of the Division of Maternal and Child Welfare of the State Health Department on account of ill health and is succeeded by Dr. Alice D. Chenoweth, formerly of Rosemont, Pennsylvania.

Dr. Robert Hendon, Louisville, announces the removal of his office to 404 Brown Building, practice limited to internal medicine and endocrinology.

Continued on page 36

FREE—*a helpful booklet on posture for your patients . . .*

Book measures 3¼ by 6¼ inches . . . is attractively printed in blue . . . and profusely illustrated with skeletal diagrams.

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Forward to me without charge ..... copies of "Blue Prints for Body Balance."

..... M.D.

STREET.....

CITY.....STATE.....

Continued from page 958

Dr. George S. Mahon, London, First Lieutenant, Medical Corps, U. S. Army, is now stationed at Pine Bluff Arsenal, Pine Bluff, Arkansas.

Dr. Branham B. Baughman, Frankfort, and Miss Matilda Hoge were married recently.

Dr. Wilbert W. Buckhold, Blackey, Captain, Medical Corps, U. S. Army, is believed to have been captured on Corregidor.

DEATHS

Dr. Estill Nelson Burke, Catlettsburg, aged 43, died recently.

Dr. George Wilbur Duvall, Shelbyville, aged 61, died recently.

Dr. Willis Wilson Hobson, Harrod's Creek, aged 83, died recently.

Dr. Morton W. Haws, Fulton, aged 39, died recently.

Dr. James Carroll Nash, Harlan, aged 60, died recently of hypertensive cardiovascular disease.

Dr. D. J. Thompson, Webbville, aged 68, died recently.

Dr. Fred Carl Weber, Newport, aged 64, died recently of cerebral hemorrhage.

LOUISIANA

New Orleans Gynecological and Obstetrical Society at a recent meeting elected Dr. J. W. Reddoch, President; Dr. Earl Conway Smith, First Vice-President; Dr. Eugene H. Countiss, Second Vice-President; Dr. Edwin L. Zander, Secretary; Dr. H. B. Alsobrook, Treasurer; and Dr. Lucien A. LeDoux, a member of the Board.

Dr. Charles A. Bahn has been elected Deputy Governor of the Toastmasters' Club of New Orleans.

Dr. Clarence H. Webb, Shreveport, recently took office as District Governor of Rotary International, having been elected at the recent convention in Toronto, Canada.

Dr. George E. Burch, Department of Medicine, Tulane University of Louisiana School of Medicine, New Orleans, at the invitation of the Government of Panama, recently conducted a postgraduate course in internal medicine and cardiovascular diseases to the physicians of Panama at the Santo Tomas Hospital, Panama City.

Dr. Louis A. Monte, New Orleans, has been reelected Governor for Louisiana of the American College of Chest Physicians.

Dr. C. M. Horton, Franklin, has recently been appointed to the Louisiana State Board of Medical Examiners to succeed the late Dr. R. W. O'Donnell, Monroe.

Dr. J. A. Tucker, Baton Rouge, has been appointed Physician and Surgeon to the Louisiana School for the Deaf.

Assistant Surgeons Jack W. Hannah, Robert W. Rasor, Jack A. End and Lloyd B. Flint have been ordered to the U. S. Marine Hospital, Mobile, for duty. Assistant Surgeon David S. Ruhe has been ordered from New Orleans to the U. S. Marine Hospital at Savannah, Georgia.

DEATHS

Dr. W. McG. McBride, Hodge, aged 43, died recently.

MARYLAND

Dr. John A. C. Colston, since 1934 Associate Professor of Urology at Johns Hopkins University School of Medicine, Baltimore, succeeds Dr. Hugh H. Young as Professor of Urology at Johns Hopkins and as Director of the Brady Urological Institute of Johns Hopkins Hospital. Dr. Young recently retired with the title Professor Emeritus of Urology.

Dr. Nels A. Nelson, Baltimore, Director of the Division of Genitoinfectious Diseases of the Massachusetts Department of Health, has been appointed Deputy State Health Officer of Maryland.

Dr. Caleb W. G. Rohrer, Baltimore, Chief of the Pasteur Division of the State Department of Health, was recently pre-

Continued on page 38

Announcing—

THE TWELFTH ANNUAL CONFERENCE OF THE OKLAHOMA CITY CLINICAL SOCIETY

October 26, 27, 28, 29, 1942

SEVENTEEN DISTINGUISHED GUEST SPEAKERS

DR. JAMES E. PAULLIN, President-Elect, American Medical Association, Atlanta, Georgia;

DR. ISAAC A. BIGGER, Surgery, Medical College of Virginia;

DR. GEORGE M. CURTIS, Surgery, Ohio State University Medical School;

DR. F. H. EWERHARDT, Physical Therapy, Washington University School of Medicine;

DR. FREDERICK H. FALLS, Obstetrics, University of Illinois College of Medicine;

DR. CHARLES C. HIGGINS, Urology, Cleveland Clinic;

DR. SARA M. JORDAN, Internal Medicine, Lahey Clinic;

DR. JOHN ALBERT KEY, Orthopedics, Washington University School of Medicine;

DR. BYRL R. KIRKLIN, Roentgenology, Mayo Foundation, University of Minnesota;

DR. ANDREW W. McALESTER III, Ophthalmology, Kansas City, Missouri;

DR. DONOVAN J. McCUNE, Pediatrics, College of Physicians and Surgeons, Columbia University;

DR. FRANK J. NOVAK, JR., Otolaryngology, Chicago, Illinois;

DR. ALBERT O. SINGLETON, Surgery, Medical Department, University of Texas;

DR. TOM D. SPIES, Internal Medicine, University of Cincinnati College of Medicine;

DR. HOWARD C. TAYLOR, JR., Gynecology, New York University of Medicine;

DR. WILLARD O. THOMPSON, Internal Medicine, University of Illinois Medical School;

DR. EUGENE F. TRAUB, Dermatology, Post Graduate Medical School, Columbia University.

General Assemblies **Round Table Luncheons** **Dinner Meetings**
Post Graduate Courses **Smoker** **Commercial Exhibits**

Registration fee of $10.00 includes ALL the above features

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RED AND GREEN LABEL DRIED BREWER'S YEAST

HIGH IN THE WHOLE VITAMIN B AND THE P-P (PELLAGRA-PREVENTIVE) FACTOR

Grain grown dried brewer's yeast has been and still is the most dependable source of the whole vitamin B; still the most potent source of the whole of the P-P (pellagra-preventive) factor. In biological testing, in a diet devoid of any B vitamins, grain grown brewer's yeast makes, unaided, the full test for the whole of the B vitamins.

If not the first, we were among the first to suggest dried brewer's yeast for the treatment of pellagra. The suggestion came from seeing the exceptionally good growth, reproduction and litter raising results when not over five per cent of the yeast was fed in a diet otherwise complete, but vitamin B free diet.

SHOULD BE POTENT IN IMPORTANT PARTS

Of course, it is important to know the potency of a dried brewer's yeast in thiamin, riboflavin, nicotinic acid and the other findable factors.

IN THE WHOLE OF VITAMIN B_1

Current animal assays for the whole of the heat labile B_1 show around 50 units per gram for both the Red Label (debittered) and Green Label (straight or undebittered) Vitafood Dried Brewer's Yeast.

IN THE WHOLE OF VITAMIN B_2

The Sherman-Bourquin test for the whole of the heat stable shows from 20 to 30 units per gram.

POTENCY IN THIAMIN

A current assay from two of the country's leading laboratories shows the Red Label Yeast to contain an average of 134 micrograms of thiamin per gram; the Green Label an average of 168 micrograms of thiamin per gram. The Council on Pharmacy and Chemistry of the American Medical Association in considering dried brewer's yeast for inclusion in N. N. R. tentatively suggests a minimum of 120 micrograms of thiamin per gram.

POTENCY IN RIBOFLAVIN

The average potency of the Red Label Yeast as determined by the microbiological A. O. A. C. method is 42.2 micrograms of riboflavin per gram; the Green Label 47.6 micrograms per gram. The standard suggested for the N. N. R. is 40 micrograms per gram.

POTENCY IN NICOTINIC ACID (NIACIN)

The average nicotinic acid (niacin) content of the Red Label Yeast is 542 micrograms per gram; the Green Label is 547 micrograms per gram. The standard suggested for N. N. R. is 250 micrograms per gram.

NATURAL SOURCE—NO REINFORCEMENT

These dried brewer's yeasts are natural sources of the vitamin B complex; no reinforcement in any vitamin parts.

POTENT IN ALL OF VITAMIN B

The whole of the B vitamins must be had to do the full job. For this test, four pairs of male and female animals are put on an otherwise complete diet, devoid of any B vitamin factor, plus five per cent of the dried brewer's yeast.

Repeatedly, this test has given for both the Red and Green Label Dried Brewer's Yeast good growth, reproduction and litter rearing.

Currently in the laboratory young animals started at around 42 grams weight, are gaining on the Red Label Yeast at the rate of 15.75 grams per rat per week; on the Green Label at the rate of 16.5 grams, which is very good. The animals have good appetites, fine fur and bright eyes; are growing.

In selecting and shipping millions of pounds of dried brewer's yeast, so successfully aiding in the treatment and prevention of pellagra, this has been the main test. Dried brewer's yeasts complying with this test give uniformly successful results.

Samples for clinical or professional use will be sent on request.

VITAMIN FOOD COMPANY, INC.
VITAMIN RESEARCH LABORATORIES, INC.

122 Hudson Street **New York, N. Y.**

Continued from page 36

sented by colleagues a silver vase to observe his forty years' service with the Department.

DEATHS

Dr. Grafton D. P. Bailey, North Beach, aged 67, died recently.

Dr. Charles Willis Larned, Baltimore, aged 72, died recently of hypertensive cardiovascular disease.

MISSISSIPPI

At the third quarterly meeting of the Northeast Mississippi Thirteen Counties Medical Society which met at Amory early in September addresses were made by Dr. John Shelton Horsley, Richmond, Virginia, and Dr. Seale Harris, Sr., Birmingham, Alabama.

An army general hospital is to be built in the vicinity of Jackson at a cost of approximately $4,000,000 as announced by the War Department. The exact location has not been decided. The hospital will be of the cantonment type and construction handled by the Army district engineers' office at Vicksburg.

Dr. R. J. Jones, formerly of Greenwood, has been called into military service as Captain and is now located with the U. S. Army Medical Corps, Headland, Alabama.

Dr. John S. Harter, Sanatorium, was elected Governor for Mississippi of the American College of Chest Physicians at the recent annual meeting.

The following County Health Officers have gone into service: Dr. R. J. Jones, Greenwood; Dr. Joe H. Price, Iuka; Dr. A. L. Adam, Natchez, and Dr. J. C. McGuire, Hazlehurst.

Dr. R. F. Mayer, Director, Claiborne County Health Department, Port Gibson, has resigned to enter private practice.

MISSOURI

American Public Health Association will hold its next annual meeting at St. Louis, October 27-30.

Dr. Herbert L. Mantz, Kansas City, was elected a Governor for Missouri of the American College of Chest Physicians at the recent meeting of the College.

Missouri Chapter, American College of Chest Physicians, at its last meeting elected Dr. Paul Murphy Koch, President; Dr. Sam Snider, Kansas City, Vice-President; and Dr. J. Stocker, Mount Vernon, Secretary-Treasurer.

DEATHS

Dr. John J. Chandler, Lutesville, aged 78, died recently.

Dr. John Lane Evans, Brookfield, aged 46, died recently of myocarditis.

Dr. Hugo Ehrenfest, St. Louis, aged 72, died recently of coronary thrombosis.

Dr. Henry Max Lissack, Concordia, aged 78, died recently of cerebral hemorrhage.

Dr. Aloysius Nicholas J. Dolan, Excelsior Springs, aged 71, died recently.

NORTH CAROLINA

The Regional Meeting of the American College of Physicians scheduled to be held in Winston-Salem in October has been indefinitely postponed.

Dr. Wingate M. Johnson, Winston-Salem, was elected Vice-President of the American Geriatrics Society at its organization meeting held in Atlantic City recently.

Dr. Otis Marshall, formerly of Culpeper, Virginia, has resigned from the Medical Service of the American Red Cross, and for the duration will be Director of Health in Industrial Surgery for the Ecusta Paper Corporation at Brevard.

Dr. Merle D. Bonner, Jamestown, was elected Governor for North Carolina of the American College of Chest Physicians at its recent annual meeting, and Dr. Karl Schaffle, Asheville, as Regent of the College.

Dr. George T. Harrell, Jr., Associate Professor of Medicine, Bowman Gray School of Medicine, Wake Forest College, Winston-

Continued on page 40

THE NEW YORK POLYCLINIC
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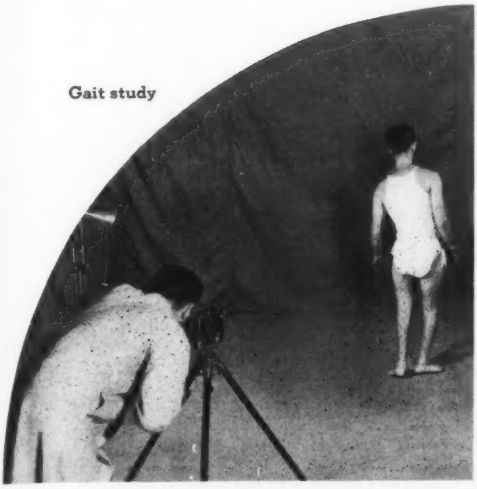
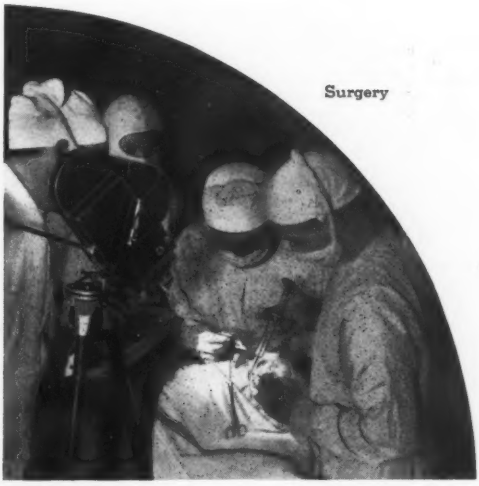
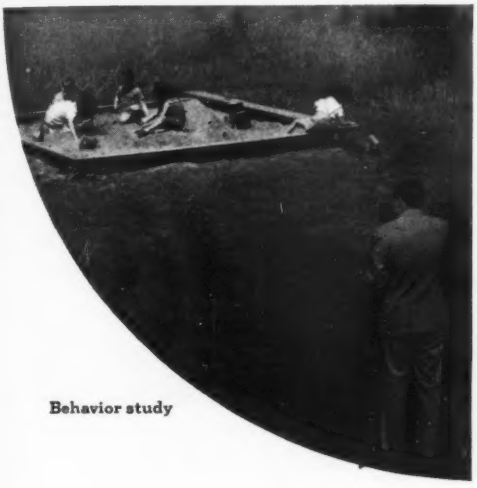


Gait study



Surgery



Behavior study

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Continued from page 38

Salem, attended the course in Medical Aspects of Chemical Warfare given under the direction of the Medical Division of the Office of Civilian Defense at the University of Cincinnati Medical School, Cincinnati, Ohio.

Dr. Milton B. Clayton, Statesville, has been appointed Chief Surgeon of the Southern Railway Company and of the lines included in the Southern Railway System, except the Cincinnati, New Orleans, and Texas Pacific. He assumed duties September 1, with headquarters in Washington, D. C.

Dr. Deryl Hart and Dr. Samuel E. Upchurch, Duke Hospital, Durham, were awarded the Silver Medal by the Committee on Scientific Exhibits of the American Medical Association for the demonstration of their technic for operating room sterilization by radiant energy.

Dr. F. T. Harper, Sanatorium, is Medical Director of the Alamance County Sanatorium which opened recently with a capacity of thirty beds, twenty-two for white and eight for colored.

Dr. C. D. Armstrong, Health Officer of Salisbury, was chosen Representative Director for the North Carolina Tuberculosis Association on the Board of the National Tuberculosis Association after the Committee on Qualifications reported that the North Carolina Tuberculosis Association met all requirements again this year and was entitled to have this representative.

Dr. William Craig Parks and Miss Mary Ruth Brower, both of High Point, were married recently.

OKLAHOMA

Dr. Henry H. Turner, Oklahoma City, was reelected Secretary of the Association for the Study of Internal Secretions at its annual meeting.

Dr. Paul C. Colonna, Professor of Orthopaedic Surgery and Chief of the Orthopaedic Service in the University of Oklahoma School of Medicine and Crippled Children's Hospitals, Oklahoma City, has resigned his position to accept the position of Professor of Orthopaedic Surgery in the University of Pennsylvania School of Medicine, Philadelphia. Dr. Willis Kelly West, formerly Associate Professor of Orthopaedic Surgery on the Faculty of the School of Medicine, has been appointed Acting Chairman of the Department of Orthopaedic Surgery and Acting Chief of the Orthopaedic Service in the Hospitals, replacing Dr. Colonna.

Dr. Irwin C. Winter, Associate Professor of Pharmacology, University of Oklahoma School of Medicine, Oklahoma City, has resigned to accept a position as Medical Consultant with the Council on Pharmacy and Chemistry of the American Medical Association.

Dr. A. A. Hellbaum, Associate Professor of Physiology, University of Oklahoma School of Medicine, Oklahoma City, was recently granted a leave of absence for further study at the University of Chicago.

Dr. Carl A Bunde, Assistant Professor of Physiology, University of Oklahoma School of Medicine, Oklahoma City, has resigned to accept the appointment of Assistant Professor of Physiology at Baylor University School of Medicine, Dallas, Texas.

Dr. Irvin S. Danielson, Associate Professor of Biochemistry, University of Oklahoma School of Medicine, Oklahoma City, has resigned to accept a position with the Lederle Laboratories, New York City.

Dr. Floyd Bartheld and Dr. C. E. Lively, McAlester, were recently honored before entering the Medical Corps, U. S. Army, by a barbecue supper at the country home of Dr. Edwin D. Greenberger, McAlester, when the members of the Pittsburg County Medical Society met.

Deaths

Dr. J. C. Bushyhead, Claremore, aged 72, died July 11.

Dr. Dred Rumley Dorente, Ada, aged 61, died recently of cerebral hemorrhage and hypertension.

Dr. Francis C. Myers, Tulsa, aged 62, died recently of a heart attack.

SOUTH CAROLINA

South Carolina State Hospital, Columbia, has received $75,000 for the establishment and operation of a research laboratory

Continued on page 42

Throw Away Your Plaster Shears!

Remove Major Plaster Bandage with Hot Water

When you use Major Plaster Bandages, you say goodbye to difficult cast removal. You and your patients alike will be pleased with these strong, lightweight casts, easily bivalved or removed without hard work on your part or pain to the patient. Major Bandages are put on with cold water, removed with hot water, by your choice of two methods. Immersing or sponging the cast with hot water allows you to unwrap it as you would any bandage. Or, the cast may be bivalved by scoring it when applied, then removed as shown at the right. Order a trial supply today . . . your satisfaction is guaranteed. Packed one dozen in a tin, priced as follows:

Size	1-11 Dozen	12 Dozen	36 Dozen
2"x3 yds.	$1.75 Doz.	$1.66 Doz.	$1.58 Doz.
3"x3 yds.	2.10 "	2.00 "	1.89 "
4"x3 yds.	2.80 "	2.66 "	2.52 "
5"x3 yds.	3.35 "	3.18 "	3.02 "
6"x5 yds.	3.80 "	3.61 "	3.42 "

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Hot water from a syringe, applied along a scored line, makes bivalving of Major casts an easy matter.

The plaster is disintegrated by the water, leaving only the crinoline, cut with bandage scissors.

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Administration of Dimenformon, the Roche-Organon brand of the pure follicular hormone, *a*-estradiol, and Dimenformon Benzoate, the benzoic acid ester, brings about a total remission of the distressing symptoms and offers the menopausal woman complete comfort. Her mental energy, serenity and optimistic outlook are restored; her physical vigor is improved.

These effective Roche-Organon estrogenic preparations offer the advantages of marked potency, prolonged action, convenience of treatment, and economy. Furthermore, unlike the artificial estrogens, Dimenformon and Dimenformon Benzoate seldom produce toxic side-effects, such as headache, nausea, vomiting and dizziness.

Literature and dosage schedules on request.

* *Lancet*, 1942, *1*:479.

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Continued from page 40

which is to be known as The Ensor Research Foundation. Dr. C. Fred Williams is one of the trustees.

Dr. George Benet, Columbia, has been ordered to active duty as Lieutenant Colonel, Medical Reserve Corps, and is located at Carlisle Barracks, Pennsylvania.

Dr. R. B. Durham, Columbia, is now Surgeon for the penitentiary and the industrial schools, filling these positions while Colonel George Benet is in active army duty.

Dr. Paul K. Switzer, Jr., formerly of Union, is now stationed at Fort Benning, Georgia.

Dr. George R. Laub has opened an office in Camden for the practice of eye, ear, nose and throat.

Dr. Robert J. Black, Ruffin, has entered the service of the armed forces.

Dr. James Higgins McIntosh, Columbia, was honored when patients and friends of the community donated a portrait of him to the Columbia Hospital. The portrait was presented in special exercises on August 6.

Dr. William S. Bethea, Latta, is now stationed at Morris Field, Charlotte, North Carolina.

Dr. E. T. Kelly, Kingstree, has been ordered to active service as Major, U. S. Army Medical Corps.

Dr. Henry Herbert, formerly of Florence, now a Lieutenant in the Medical Corps, U. S. Army, is stationed at Bainbridge, Georgia.

Dr. J. F. Hair and Dr. B. E. Ford, County Health Officers of Aiken and Clarendon Counties, respectively, have been ordered to active duty in the Medical Corps, U. S. Army.

Dr. F. P. Coleman, Columbia, has reported to San Antonio, Texas, for active army duty with the rank of Captain.

Dr. Ralph E. Brown, Barnwell, has reported for active duty in the Medical Corps at Camp Rucker, Alabama.

Dr. Robert P. Walton, formerly Professor of Pharmacology at the University of Mississippi School of Medicine, University, Mississippi, has accepted the position of Professor of Pharmacology at the Medical College of the State of South Carolina, Charleston.

Dr. M. M. Teague, Laurens, has reported for duty as a reserve officer at Biggs Field, El Paso, Texas.

Dr. Wallace D. McNair, Jr., Aiken, has reported for duty at Wellston Air Depot.

Dr. W. G. Morehouse, Columbia, has been commissioned First Lieutenant and has reported for military duty.

Dr. W. S. Hall, Columbia, has been commissioned First Lieutenant, Medical Corps, U. S. Army, and reported for military duty.

Dr. Jenning Cleckley, Bamberg, Lieutenant (sg), Medical Corps, U. S. Navy, has been ordered to duty at sea.

Dr. Julius Howard Stokes, Florence, has been appointed Assistant Secretary of the South Carolina Medical Association.

Dr. Foster M. Routh, Columbia, and Dr. Kathleen A. Riley, Florence, have been elected to serve as Physicians for the University of South Carolina, Columbia, during the absence of Dr. Edward H. Law, Columbia, who is on leave of absence with the Army. Dr. Routh will serve as physician to men and Dr. Riley as physician to women and in addition they will teach classes in the Department of Hygiene.

Dr. George E. Parkhurst, Charleston, Assistant Surgeon, U. S. Public Health Service, has been assigned as Director of the venereal disease program of the Charleston County Health Department.

Dr. William Smith Brockington, Charleston, and Miss Florence Virginia Blake, Kingstree, were married recently.

Deaths

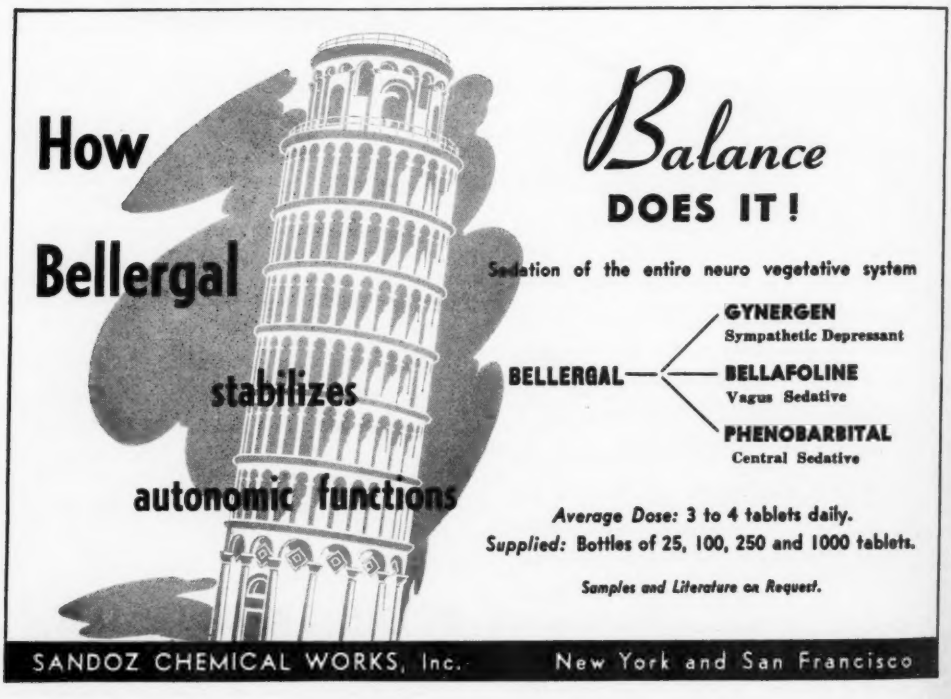
Dr. H. Clay Foster, Beaufort, aged 67, died recently of coronary thrombosis.

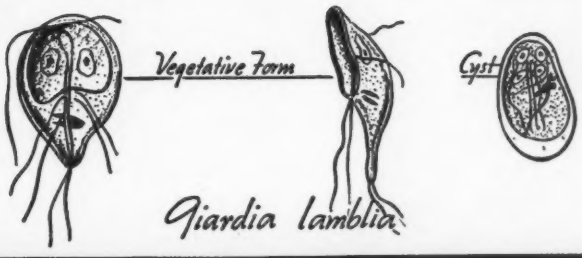
Dr. William Miller Thorne, Charleston, aged 61, died recently of coronary occlusion.

TENNESSEE

Tennessee Radiological Society at its recent annual meeting held in Memphis elected Dr. Horace D. Gray, Memphis, Presi-

Continued on page 46





GIARDIASIS

. . . Although evidence for the pathogenic nature of Giardia lamblia is not conclusive, this microorganism may possibly be the cause of diarrhea, abdominal pain and other symptoms of the clinical picture commonly referred to as giardiasis.

It has recently been demonstrated that Giardia lamblia can be eradicated from the intestinal tract with remarkable promptness by the administration of Atabrine Dihydrochloride.

The usual dose of Atabrine Dihydrochloride is 0.1 Gm. three times daily for five days.

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Chemotherapeutic Specific Against Malaria

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Faultless Equipment...

will lighten your burden on the civilian front

While the armed services continue to draw heavily upon the ranks of professional men, there remain thousands of physicians who must assume the increased burden of protecting the health of the civilian population. Now, more than ever before, the constant serviceability of equipment is important . . . today, quality counts!

Factually, there are over 200,000 Baumanometers in use in hospitals and offices of private practitioners. Under the existing emergency, physicians cannot afford to be handicapped by using instruments that have lost their inherent accuracy. Aside from the clinical aspects, this would result in loss of time—and time is a vital factor. Accurate, trouble-free bloodpressure service is indispensable. Why not order a precision-tested, true mercury-gravity Baumanometer without delay.

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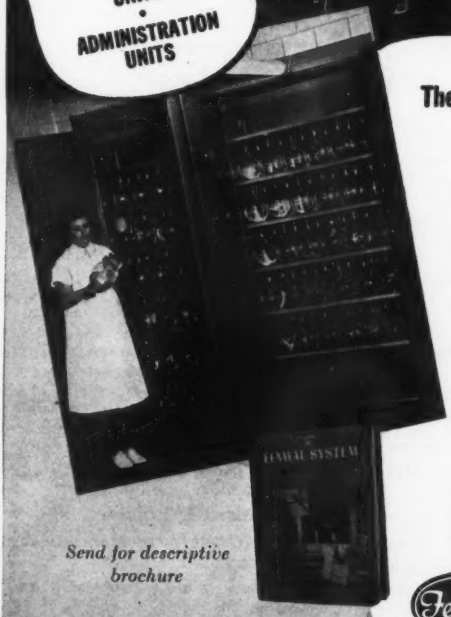

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Continued from page 42

dent; Dr. Franklin B. Bogart, Chattanooga, Vice-President; and Dr. John Marsh Frere, Chattanooga, Secretary-Treasurer.

Dr. Raymond Crowe, Nashville, was elected a Governor of the American College of Chest Physicians at its recent annual meeting.

Dr. Philip Henry Livingston, Chattanooga, and Miss Jean Doris Wicksman, Nashville, were married recently.

DEATHS

Dr. Olon H. Coleman, Major, Medical Corps, U. S. Army, formerly connected with the Tennessee Public Health Department at LaFollette, aged 34, died July 20, in African Middle Eastern theatre of war of natural causes.

Dr. George C. Horne, Jonesboro, aged 71, died July 19.

Dr. Ambrose L. Jones, Greenback, aged 73, died July 4.

Dr. Frank B. Kimzey, Union City, aged 41, died recently of angina pectoris.

Dr. James Clyde Overall, Murfreesboro, aged 61, died August 9.

Dr. Jefferson Davis Singleton, Maryville, aged 79, died recently.

Dr. Charles V. Stephenson, Centerville, aged 77, died recently of arteriosclerosis.

TEXAS

The next annual meeting of the State Medical Association of Texas will be held in Fort Worth, May 3-6, 1943, instead of San Antonio, as originally planned because a large proportion of the guest rooms of the hotels at San Antonio are under permanent occupancy by military and governmental authorities.

Texas Ophthalmological and Otolaryngological Society will meet at Dallas, December 11 and 12.

Texas Pediatric Society will meet at San Antonio, October 30-31.

The Army Hospital now under construction at Temple will be named the McCloskey General Hospital in honor of Captain James A. McCloskey, the first regular Army Medical Officer to be killed in the present war. He entered the regular Army

Continued on page 48

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Continued from page 46

service in January, 1936, and was killed in action in the Philippine Islands.

Dr. Edgar Jacob Poth, formerly of Johns Hopkins Hospital, Baltimore, Maryland, has been appointed Assistant Professor of Surgery at the University of Texas School of Medicine, Galveston, taking the place of Dr. R. M. Moore, who is on leave of absence for military service.

Beaumont Charity Hospital plans recently received final approval by the Municipal Hospital Board and have been sent to the Defense Public Works Agency which will supplement City funds by a grant of $84,000. The total project in connection with the construction of the hospital will cost approximately $250,000.

There was recently dedicated to the late Dr. William J. Sparks, Poolville, by hundreds of former patients and friends a granite memorial shaft which was placed in the public square of the town of Poolville under the sponsorship of the school trustees. It was given by Orville Bullington, an attorney of Wichita Falls, as an expression of the appreciation for aid and counsel given him and other youths reared in the Poolville community. Dr. Roy H. Gough, Fort Worth, representing the State Medical Association, gave the dedicatory address.

Dr. B. W. Wood, Director of the Jefferson County Health Unit, has been appointed Health Officer of Port Arthur to replace Dr. F. J. Beyt, who entered active service in the Medical Corps, U. S. Army.

Dr. Homer Donald, Dr. Curtice Rosser and Dr. David W. Carter, Dallas, were recently appointed adjutants in the health emergency medical service for the Dallas City-County Civilian Defense Council. Dr. Ozro Woods is Chief of the service.

Dr. Allen Shields, Victoria, has assumed control of the Victoria Hospital.

Dr. Joseph T. Roberts, Assistant Professor of Medicine and Anatomy, University of Texas School of Medicine, Galveston, has been appointed Director of the Experimental Laboratory of the University of Texas Medical Branch.

A portrait of Dr. William S. Carter was purchased by the University of Texas Medical Alumni Association and recently presented to the University of Texas Medical Branch, Galveston. Dr. Carter was appointed to the School in 1897 as Professor of Physiology and served as Dean from 1903 to 1922 and again from 1935 to 1938.

Dr. Pashnpati J. Sarma, formerly Associate Professor of Surgery, University of Illinois College of Medicine, Chicago, Illinois, has been promoted to the rank of Colonel in the Army while serving at Camp Barkeley.

Dr. Hanes Brindley, Temple, and Miss Julia Martha Barton were married recently.

Deaths

Dr. J. F. Adcock, Wichita Falls, aged 39, died recently of heart disease.

Dr. E. Adam Bendow, Luling, aged 60, died recently of coronary occlusion.

Dr. J. M. Hubert, Cleveland, aged 68, died recently of angina pectoris.

Dr. Albert Olin Menefee, Tatum, aged 77, died recently of heart disease.

Dr. John Oliver McReynolds, Dallas, aged 77, died recently of carcinoma of the stomach.

Dr. C. B. Stewart, Huntington, aged 64, died recently.

VIRGINIA

Alexandria Medical Society has elected Dr. J. Cameron, President; Dr. Alfred Abramson, Vice-President; and Dr. S. H. Williams, Secretary-Treasurer, reelected, all of Alexandria.

Continued on page 50

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*"The Care of the Aged", Edit., J.A.M.A., 109:26, Dec. 25, 1937.

HORLICK'S

Continued from page 48

Augusta County Medical Society has elected Dr. H. J. Morton, Stuarts Draft, President; Dr. J. H. Thomas, Greenville, Dr. George Kinser, Waynesboro, and Dr. W. M. Phelps, Staunton, Vice-Presidents; Dr. Alex F. Robertson, Jr., Secretary; and Dr. J. E. Womack, Staunton, Treasurer.

Botetourt County Medical Society has elected Dr. L. A. Micou, Eagle Rock, President, and Dr. E. B. Morgan, Fincastle, Secretary.

Fauguier County Medical Society has elected Dr. V. L. McCullers, Remington, President; Dr. W. G. Trow, Warrenton, and Dr. Wade C. Payne, Haymarket, Vice-Presidents; and Dr. J. Frank Folk, Warrenton, Secretary-Treasurer.

Wise County Medical Society has elected Dr. W. B. Barton, Stonega, President.

Medical College of Virginia, Richmond, recently received a gift of $1,000 for student loans from Miss Mary E. Williamson and a grant of $10,500 from the American Tobacco Company for research in physiology and pharmacology.

Dr. Edward M. Holmes, Jr., for several years Director of the Division of Venereal Disease Control of the State Department of Health, has been assigned as Venereal Disease Control Officer at Randolph Field, Texas. Dr. Wallace E. Baker, Petersburg, Assistant to Dr. Holmes, has been named Acting Director of the Division of Venereal Disease Control for the duration.

Dr. Hubert D. Crow has been appointed Director of a combined district health unit comprising the counties of Southampton, Isle of Wight, Nansemond and the City of Suffolk, with headquarters in Suffolk.

Dr. Hugh C. Henry, Richmond, Director of State Hospitals, was recently appointed Commissioner of Mental Hygiene and Hospitals, a newly created position provided in the state government reorganization act.

Dr. H. Cantor, formerly of Petersburg, and also formerly of the 45th General Hospital of the Medical College of Virginia, is now in England as Chief Surgeon of the 151st Station Hospital.

Dr. F. B. Teague, Martinsville, has been named Acting Secretary of Patrick Henry Medical Society, replacing Dr. H. M. Price, who has been called into the Army.

Dr. Huston St. Clair, Tazewell, was recently chosen President of the Virginia State Chamber of Commerce.

Dr. Edgar Gammon, President of Hampden Sydney College, has been appointed by the Governor as a member of the Legislative Committee to study medical licensure.

Dr. Julius C. Hulcher, Lt., Medical Corps, U. S. Army, Richmond, and Miss Elsie Wade, Pulaski, were married August 14. Dr. Hulcher is at present stationed at Camp Lee with General Hospital No. 45.

Dr. J. T. Booth, Ashland, has been appointed county jail physician.

Dr. R. L. Hillman, who served Emory and Henry College for the past seventeen years as College Physician and head of the Department of Biology, has taken up industrial practice for the duration of the war, and is now employed by the Clinchfield Coal Corporation of Clinchco.

Dr. Theodore Maisel, who was associated in practice with Dr. Marvin E. Nuckols for three years, until the time of his death, has moved his offices to 2618 Grove Avenue, Richmond.

Dr. J. E. K. Flannagan, recently of Richmond, is now located in Marion, where he is associated with the Lee Memorial Hospital.

Dr. J. G. Jantz, after a time spent in private practice in Kansas, has returned to Bedford where he is engaged in surgical work at the John Russell Hospital, which was recently organized.

Dr. Kenneth N. Byrne, Lexington, who entered the Army several months ago with the rank of Lieutenant, has been promoted to Major in the Medical Corps and is now serving as Chief of Infirmaries at Fort Eustis.

Dr. L. C. Haynes, formerly of Mt. Jackson, is now at the Veterans Administration Facility in Waco, Texas, where he is taking special training in the Adjudication Department as rating specialist medical.

Dr. Florence I. Mahoney, for several years Physician to the Mary Baldwin College, Staunton, is now connected with Stephens College at Columbia, Missouri.

Dr. John Edgar Stevens, Lieutenant, Medical Corps, U. S. Army, and Miss Charlotte Ruth Mooers, both of Richmond, were married recently.

Dr. William Russell Jones, Jr., Medical Corps, U. S. Army,

Continued on page 52

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Continued from page 50

and Miss Frances Carlyle Creath, both of Richmond, were married August 3.

Dr. Hunter Sheppard Jackson and Miss Elizabeth Marr Ashbrooke, both of Richmond, were married August 12.

Dr. W. John Walker, Lynchburg, and Mrs. Millian Brooke Somerville, Richmond, were married August 19.

Deaths

Dr. Frederick D. Brown, Richmond, aged 54, died recently.

Dr. Thomas Chalmers Clark, Arlington, aged 89, died recently of cerebral hemorrhage and arteriosclerosis.

Dr. Charles Lewis Dillon, Boone Mill, aged 73, died recently.

Dr. Robert Newton Graham, St. Charles, aged 63, was killed by a train July 29.

Dr. Horace Taylor Hawkins, Waynesboro, aged 54, died July 30.

Dr. Benjamin Alonza Rice, Forest, aged 63, died recently of coronary thrombosis.

WEST VIRGINIA

A Committee on Conservation of Vision has been appointed by Dr. R. O. Rogers, President of the West Virginia State Medical Association, to cooperate with the National Society for the Prevention of Blindness and with the Committee on Conservation of Vision and Prevention of Blindness of the American Medical Association in matters which pertain to the conservation of vision in West Virginia. He appointed on the Committee Dr. V. E. Holcombe, Charleston, Chairman; Dr. Welch England, Parkersburg, and Dr. R. A. Tomassene, Wheeling.

The following physicians have been appointed on the Publicity Committee of the West Virginia State Medical Association: Dr. James L. Wade, Parkersburg, Chairman; Dr. Walter E. Vest, Huntington, and Dr. W. W. Point, Charleston.

Dr. Edmond O. Gates, Welch, who was commissioned a Major in the Medical Corps, U. S. Army, several months ago and who has been on duty with the 14th Station Hospital at Camp Edwards, Massachusetts, has been commissioned a Lieutenant Colonel. His hospital unit has been ordered overseas for active duty.

Dr. Otis G. King, recently on the staff of St. Luke's Hospital, Bluefield, has entered the Medical Corps, U. S. Army, and reported for duty at Fort Eustis.

Dr. Athey R. Lutz, Parkersburg, has entered the Army Medical Corps with the rank of Major.

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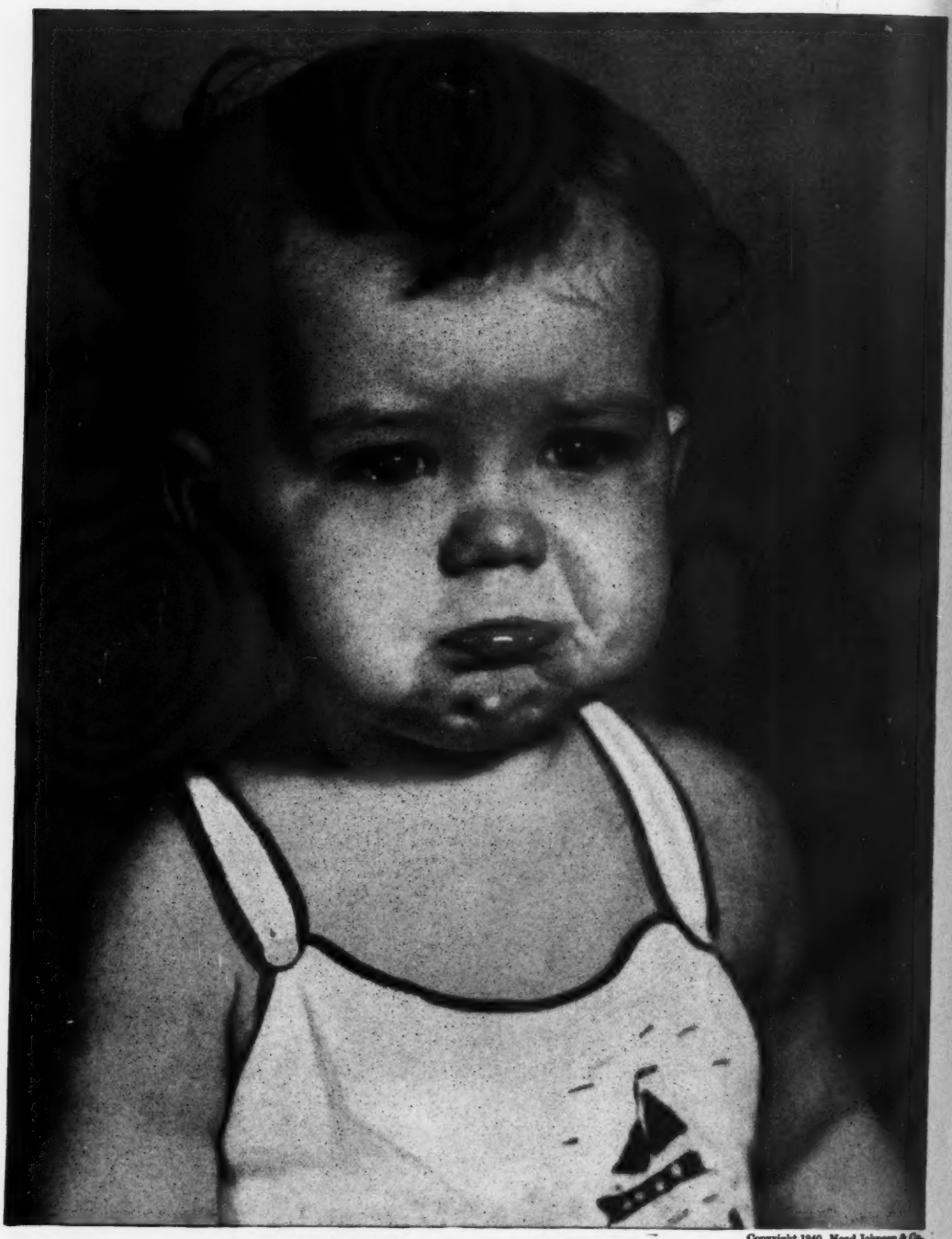

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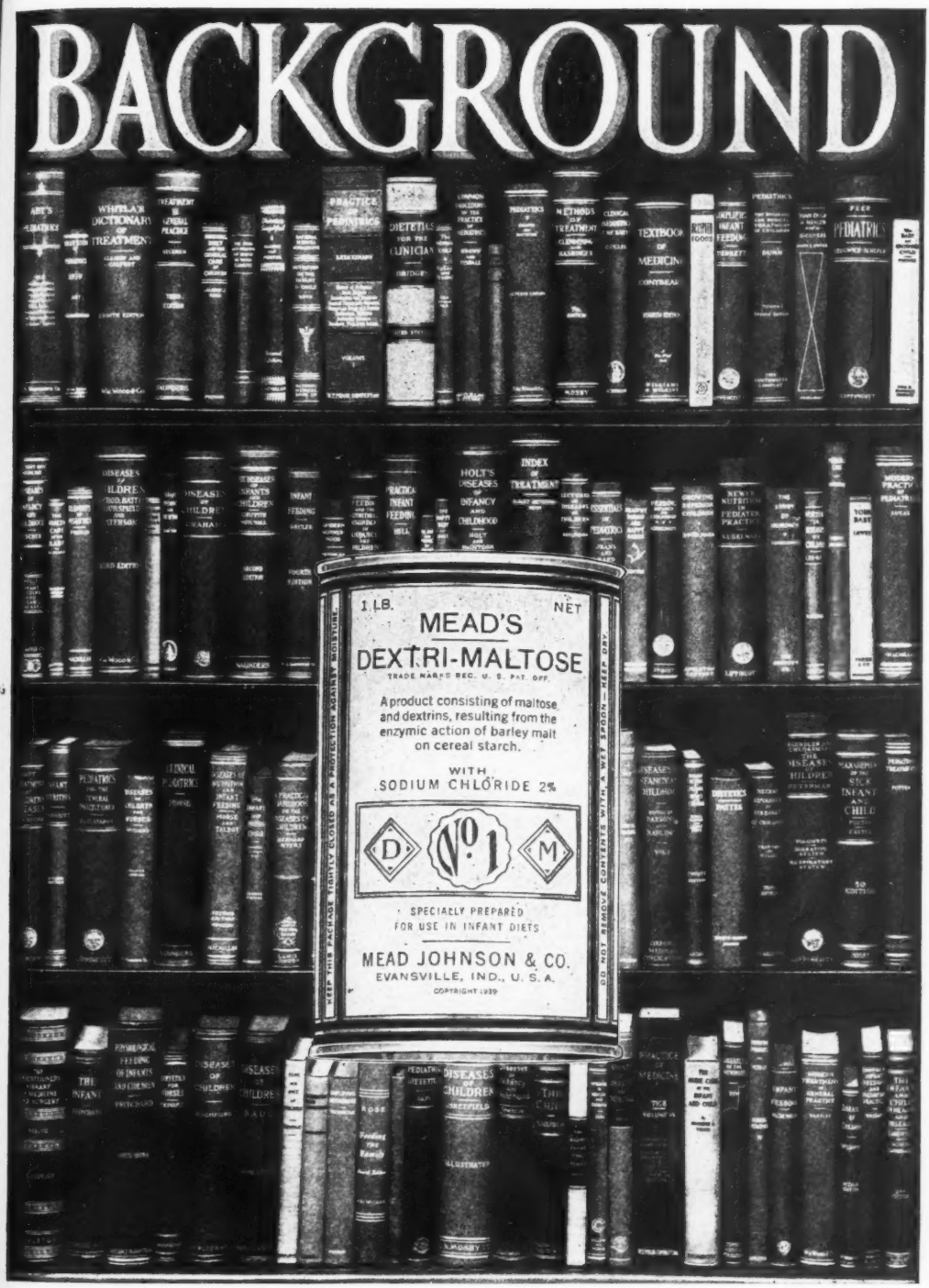
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